IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

AMPEX CORPORATION, *Plaintiff,* v. EASTMAN KODAK COMPANY, ALTEK CORPORATION, and CHINON INDUSTRIES, INC., *Defendants.*	C.A. No. 04-1373 (KAJ) **REDACTED VERSION**

DECLARATION OF RAY R. ZADO IN SUPPORT OF AMPEX CORPORATION'S MOTION FOR SUMMARY JUDGMENT THAT U.S. PATENT NO. 4,821,121 IS NOT UNENFORCEABLE DUE TO INEQUITABLE CONDUCT

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I, Ray R. Zado, declare:

1. I am a member of the bar of the State of California, and an associate with the firm of Ropes & Gray, 525 University Avenue, Suite 300, Palo Alto, California, counsel to Complainant Ampex Corporation ("Ampex") in this investigation.

2. I make this declaration in support of Ampex's Motion for Summary Judgment that U.S. Patent No. 4,821,121 Is Not Unenforceable Due to Inequitable Conduct. Unless specifically indicated otherwise, this Declaration is made based on personal knowledge.

3. Attached hereto as Exhibit 1 is a true and correct copy of U.S. Patent No. 4,821,121.

4. Attached hereto as Exhibit 2 is a true and correct copy of an article bearing Bates number AX060494-97, entitled "The DLS6000 – A New Digital StillStore Library System" by Hugh Boyd, Quantel, International Broadcast Engineer (GB), Vol. II, no. 170 (March 1980).

5. Attached hereto as Exhibit 3 are true and correct copies of selected pages from the Deposition of Richard J. Taylor, taken in this action on April 28, 2006.

6. Attached hereto as Exhibit 4 is a true and correct copy of a document bearing Bates numbers AX022131-148, entitled "Preliminary Description – The DLS 6000 Series Digital Library System."

7. Attached hereto as Exhibit 5 is a true correct copy of United States Patent No. 4,302,776, dated November 24, 1981.

8. Attached hereto as Exhibit 6 is a true correct copy of United States Patent No. 4,172,264, dated October 23, 1979.

9. Attached hereto as Exhibit 7 is true and correct copy of selected pages of a document bearing Bates numbers EKC000142832-966, entitled "Quantel Limited DLS 6000 System Service Manual."

10. Attached hereto as Exhibit 8 is true and correct copy of a document bearing Bates numbers AX022119-130, entitled "The DLS 6000 Digital Library System – Preliminary Description."

11. Attached hereto as Exhibit 9 is true and correct copy of a document bearing Bates numbers AX203954-998, entitled "Quantel Limited DLS 6000/1 Operating Instructions."

12. Attached hereto as Exhibit 10 is a true and correct copy of selected pages of the Initial Expert Report of Richard John Taylor, submitted in this action on March 24, 2006.

13. Attached hereto as Exhibit 11 is a true and correct copy of selected pages from the transcript of the Deposition of Richard J. Taylor, taken in the ITC Investigation No. 337-TA-527 on June 6-7, 2005.

14. Attached hereto as Exhibit 12 is true and correct copy of selected pages of a document bearing Bates numbers EKC 002001646-787, entitled "Quantel Limited DLS 7000/1 Operating and Service Manual."

15. Attached hereto as Exhibit 13 is true and correct copy of selected pages of a document bearing Bates numbers EKC 0020000467-537, entitled "Quantel Limited DPB 7001 Paint Box User Guide."

16. Attached hereto as Exhibit 14 is true and correct copy of selected pages of a document bearing the Bates numbers AVQ7562-929, entitled "AVA Ampex Video Art Operator's Manual".

17. Attached hereto as Exhibit 15 is true and correct copy of selected pages of a document bearing Bates numbers AVQ008044-408, entitled "AVA Service Manual".

18. Attached hereto as Exhibit 16 is a true and correct copy of selected pages from the transcript of the Deposition of Junaid Sheikh, taken in the ITC Investigation No. 337-TA-527 on May 6, 2005.

19. Attached hereto as Exhibit 17 is true and correct copy of a document bearing Bates numbers AVQ000925-45, entitled "AVA Software Conventions," by Tom Porter of Ampex Corporation.

20. Attached hereto as Exhibit 18 is a true and correct copy of selected pages from the deposition of the Deposition of Lawrence Evans, taken on February 21, 2006.

21. Attached hereto as Exhibit 19 is a true and correct copy of selected pages bearing Bates numbers AX061557-752, from the File History of U.S. Patent No. 4,821,121.

22. Attached hereto as Exhibit 20 is true and correct copy of an article bearing the Bates numbers AVQ010130-136, entitled "Practical Computer Graphics for Television," by H.R. Regnier and Lawrence J. Evans, Ampex Horizons.

23. Attached hereto as Exhibit 21 is a true and correct copies of selected pages from a document bearing the Bates numbers EKC005021058-205, entitled "PDP 11 – Processor Handbook".

24. Attached hereto as Exhibit 22 is true and correct copy of selected pages of a document bearing the Bates numbers AVQ003684-4200, entitled "AVA".

25. Attached hereto as Exhibit 23 is true and correct copy of selected pages from the Deposition Transcript of William Claire Lindeman, taken in this action on February 24, 2006.

26. Attached hereto as Exhibit 24 is true and correct copy of selected pages from the Supplemental Response of Eastman Kodak Company to Complainant Ampex Corporation's Interrogatories No. 34, 35, 57 and 60, 98, and 101, served in ITC Investigation No. 337-TA-527 on May 25, 2005.

27. Attached hereto as Exhibit 25 is true and correct copy of the First Supplement to the Initial Expert Report of Richard John Taylor, submitted in this action on April 20, 2006.

I declare under penalty of perjury that the foregoing is true and correct. Executed this 23rd day of May, 2006, at Palo Alto, California.

RAY R. ZADO

EXHIBIT 1

U 1167518

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

May 07, 2004

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THIS OFFICE OF:

U.S. PATENT: *4,821,121*
ISSUE DATE: *April 11, 1989*

By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS

T. LAWRENCE
Certifying Officer

United States Patent [19]

Beaulier

[11] **Patent Number: 4,821,121**

[45] **Date of Patent: Apr. 11, 1989**

[54] **ELECTRONIC STILL STORE WITH HIGH SPEED SORTING AND METHOD OF OPERATION**

[75] Inventor: **Daniel A. Beaulier, Menlo Park, Calif.**

[73] Assignee: **Ampex Corporation, Redwood City, Calif.**

[21] Appl. No.: **18,786**

[22] Filed: **Feb. 24, 1987**

Related U.S. Application Data

[63] Continuation of Ser. No. 740,297, May 31, 1985, abandoned, which is a continuation of Ser. No. 483,327, Apr. 8, 1983, abandoned.

[51] Int. Cl.[4] H04N 5/14
[52] U.S. Cl. 358/160; 358/183
[58] Field of Search 358/160, 183, 311, 342, 358/102; 360/35.1, 9.1, 10.1, 14.1

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,152,722	5/1979	Inuiya et al.	358/102
4,172,264	10/1979	Taylor et al.	358/185
4,302,776	11/1981	Taylor et al	358/160

FOREIGN PATENT DOCUMENTS

0051305 5/1982 European Pat. Off. 360/14.1

OTHER PUBLICATIONS

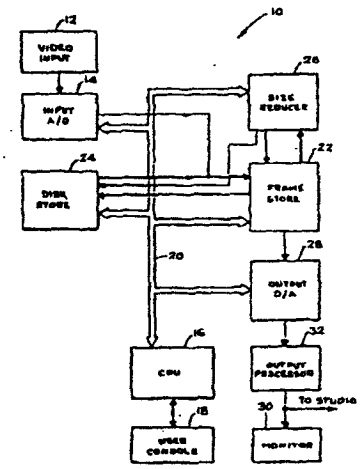
Hugh Boyd, "The DLS6000—A New Digital Still Store Library System", International Broadcast Engineer, vol. 11, No. 170, pp. 46–48.

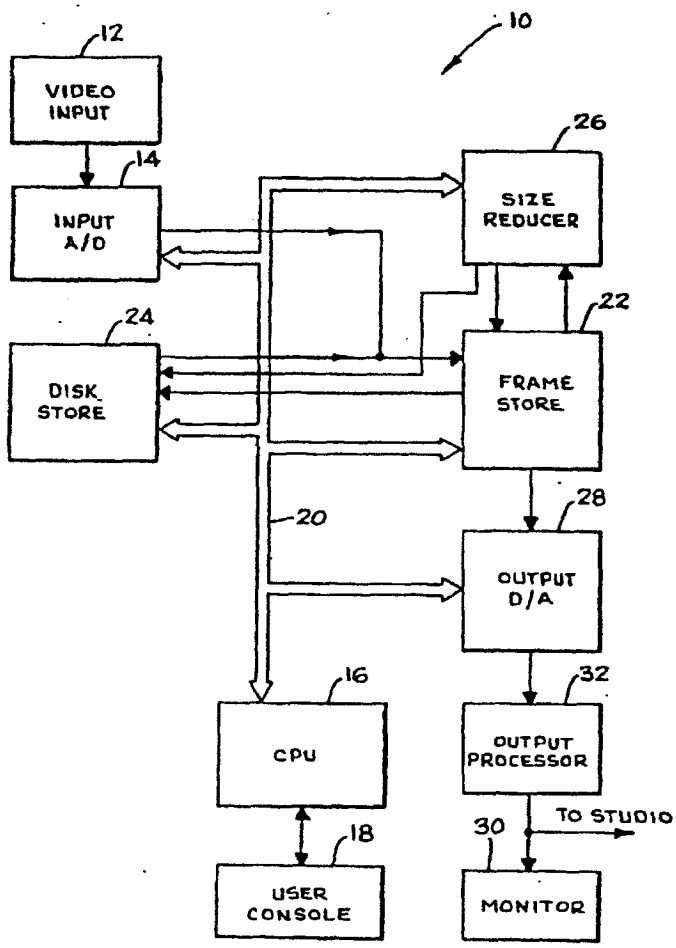
Primary Examiner—Edward L. Coles, Sr.
Assistant Examiner—David E. Harvey
Attorney, Agent, or Firm—Bradley A. Perkins; Ronald C. Fish; George B. Almeida

[57] **ABSTRACT**

An electronic still store system stores and selectively outputs video image data defining a plurality of signal frame still images. The simultaneous display of up to 16 or more quarter sized images for scanning or sorting by an operator is facilitated by generating a quarter sized copy of each newly received image frame and storing both together on a conventional magnetic disk storage device as is typically employed in general purpose digital computing systems. The quarter sized image can then be recalled directly for a multi-image scan or sort function in which 16 reduced size images are displayed simultaneously without the time delays associated with the retrieval and size reduction of 16 full size images.

15 Claims, 1 Drawing Sheet





ELECTRONIC STILL STORE WITH HIGH SPEED SORTING AND METHOD OF OPERATION

This is a continuation of application Ser. No. 740,297, filed on May 31, 1985, now abandoned, which is a continuation of application Ser. No. 483,327, filed Apr. 8, 1983, now abandoned.

BACKGROUND OF THE INVENTION

This invention relates to a digital electronic still store for broadcast television signals and more particularly to a still store providing a high speed multiimage scan or sort capability.

Digital electronic still store video display systems store a plurality of frames of video images on relatively low cost magnetic disk storage. Any selected one of the stored image frames may then be communicated to a frame store from which data defining the image is repetitively read out to generate a continuously displayed television image. The still store image can then be combined with a second image to create a combined video image. For example, it is common to insert a selected still store image depicting a news event in the upper left hand corner of a live studio image depicting a newscaster describing the news event.

The disk store is capable of storing a large library of single frame images and it is often desirable to generate a reduced size multiple image picture for editing or other purposes. For example, it might be desirable to create a special effect with multiple images or an editor may wish to view and compare several images at the same time for the purpose of selecting those images which will be used in a television broadcast. However, each of the several images which are to be simultaneously displayed must first be read from the disk store as full size images and then reduced for insertion into the multi-image display. This process takes ½ to ¾ second for each image and results in a delay of several seconds for the composite multi-image display. Such a time delay is at best disconcerting for a busy editor and precludes use of the editing features of the system during a real time broadcast.

U.S. Pat. No. 4,172,264, "Control Arrangement for Video Synchronizers", to Taylor et al describes an arrangement in which joysticks may be used to selectively position video images on a television display. The system requires full sized images to be accessed and then reduced in size as described above.

U.S. Pat. No. 4,302,776, "Digital Still Picture Storage System With Size Change Facility", to Taylor et al discloses a still store system in which multiple images may be accessed and reduced in size for simultaneous display as discussed above. The suggestion is made that an array of reduced size images be stored as a single image frame. This has the effect of eliminating the time required to reproduce the array but precludes the flexibility of choosing or repositioning any desired images when recalling the array. Furthermore, the aforementioned time delays are encountered when assembling the original multi-image display.

SUMMARY OF THE INVENTION

An electronic still store system in accordance with the invention rapidly generates and outputs for display to an operator a still image frame comprising a plurality of selectively positioned, reduce size images which may be simultaneously viewed for scanning or editing purposes. The system includes an image store for storing therein a plurality of frames of video images with both a full spatial resolution copy for full size video output and a reduced spatial resolution copy for reduced size video output of each image being stored, and a frame store which is operable in a first mode to receive from the image store, store and repetitively generate a full spatial resolution output image frame. The frame store is operable in a second mode to receive from the image store and store a plurality of reduced spatial resolution image frames. The frame store is further operable in the second mode to repetitively generate an output image frame having an image from each of the plurality of reduced spatial resolution image frames selectively located at a different position within the output image frame.

The system may further include an image size reducer coupled to produce a quarter size reduced spatial resolution image in response to a full resolution image stored by the frame store, a video input, an analog-to-digital converter coupling the video input to the frame store, a monitor for viewing output video images and an output digital-to-analog converter coupled to convert the output video images from a digital form to an analog form for use by the monitor. A central processing unit is connected to receive user commands through a user console and to control the other devices of the system in response thereto.

The image store employed herein is a general purpose magnetic disk storage system as is currently used in general purpose digital computer systems.

In operation the system can rapidly assemble an array of 16 reduced size images for output as a single image frame. A system operator may view the reduced size images simultaneously for rapid scanning of some or all of the stored images within the image store, which is preferably a magnetic disk. Because the images are read from the image store in reduced size and spatial resolution, the output image formation time is approximately the ½ to ¾ second required to transfer a single full size image instead of the several seconds which would be required to transfer 16 full size images prior to resolution reduction and storage as a reduced size image.

Using this system an operator may rapidly scan many still frame images which are stored by the image store or may compile lists of randomly selected image frames for simultaneous viewing as an array of reduced size images. Because of the rapid response rate the system becomes feasible for development and outputting of data frames containing multiple reduced size images on demand during a television broadcast.

BRIEF DESCRIPTION OF THE DRAWING

A better understanding of the invention may be had from a consideration of the following detailed description taken in conjunction with the accompanying drawing in which the sole FIGURE is a block diagram representation of an electronic still store system in accordance with the invention.

DETAILED DESCRIPTION

Referring now to the sole FIGURE, a digital electronic still store system 10 for rapidly assembling as a single image frame an array of reduced size images is shown as including a video input circuit 12. The video input circuit 12 may be another electronic still store system, a TV camera, or some other source of video data from which one or more frames of a video image

may be captured. In the preferred embodiment of the electronic still store system 10, the video signal is processed in component form. A method and apparatus for producing the component information which may be employed is more fully disclosed in the U.S. Pat. No. 4,675,876, issued Sept. 22, 1987 to D. Beaulier, which is assigned to the same assignee as this application, which is incorporated by reference herein. Therefore, the video input 12 will include appropriate video signal decoding means to process video data received from sources that provide the data in an encoded form.

An input analog-to-digital (A-D) converter 14 is coupled to receive an input video signal provided by the video input circuit 12, which typically includes video signal processing circuitry that prepares the signal for conversion by the A-D converter 14. The A-D converter 14 converts the input video signal to a digital form which is suitable for handling and processing by digital circuitry. The input AD 14 receives the video signal from the video input 12 and converts the video signal to the digital sampled data form in which each pixel of video data is represented by three eight bit data bytes defining respectively luminance, red chrominance and blue chrominance components. Conventionally, the chrominance data has half the spatial resolution of the luminance data in the horizontal dimension so that data is produced in a repetitive 4 byte luminance/chrominance component sequence of L1, CR1, CB1, L2—L3, CR3, CB3, L4 and so forth. The single byte representation affords a high dynamic resolution of 256 distinguishable states for each color component. For adequate dynamic resolution, each video component at a sampled data point is preferably defined by at least 6 binary bits providing 64 distinguishable intensities. A central processing unit (CPU) 16 formed from a Z80 microprocessor is connected to receive operator commands from a user console 18. CPU 16 is connected for bidirection communication of commands and other data over a system bus 20. The system bus 20 is connected to input A-D 14 as well as other major components of the still store system 10 to carry the address, mode select and status information required to control the operation of the still store system 10.

A frame store 22 which in the preferred embodiment is a random access memory, is coupled to receive mode control information from CPU 16 over system bus 20 and to receive video data representing a frame of a video image from either input A-D 14 or from a multiple frame image store implemented as a magnetic disk drive store 24 in the preferred embodiment but which can be any bulk storage memory device in other embodiments. Frame store 22 is a random access store that is capable of storing more data than is required for a single video image frame.

The storage capacity provided by presently available 64K memory chips enables storing up to 750 lines of video data. In any event, out of a 525 line NTSC frame of data only about 484 lines represent video data. Because of the two dimensional nature of a video image a quarter size image defined by video data having one-fourth the spatial resolution of a full size image requires one-sixteenth the storage capacity of a full size, full spatial resolution image. A quarter resolution image thus requires the equivalent storage of 30 lines of a full resolution image. In any event the frame store 22 either contains initially or is expanded to contain, storage of video data representing a full resolution full size image, as well as a quarter resolution copy thereof.

A size reducer 26 is connected to be controlled by data from CPU 16 received over the system bus 20. Size reducer 26 is operable to receive video data from frame store 22 to convert the video data to a quarter spatial resolution copy thereof, and communicate the quarter resolution copy back to frame store 22 for storage therein. In a similar fashion, when video data received from disk store 24 does not contain a corresponding quarter spatial resolution copy, size reducer 26 may be employed to generate a quarter spatial resolution copy for subsequent transfer to either frame store 22 or disk store 24. Hence, any time frame store 22 receives a video image frame that does not have a corresponding quarter resolution copy, the size reducer 26 may be used to make such a copy.

As a new frame of video data is transferred from frame store 22 to disk store 24 for more permanent storage, both the full resolution and the quarter resolution copy are transferred. Since the quarter resolution copy is represented by only one-sixteenth the data of a full resolution copy, the communication and storage of the quarter resolution copy imposes only a small burden on both system operating time and extra storage space requirement within disk store 24. It should be noted that disk store 24 is a general purpose magnetic disk storage device as is commonly used in connection with general purpose digital computing systems.

During system 10 operation frame store 22 repetitively accesses stored video data to generate a continuous stream of output video data frames representing the stored image. An output digital-to-analog converter 28 receives this digital output data and converts it to an analog video signal which is subsequently supplied to output processor 32. Output processor 32 is a conventional video signal output processor, for forming a television signal in a standard format, which can be used to drive a monitor 30 for viewing of the output video image by a system monitor. The analog video signal form may also be communicated to studio equipment for further use, broadcasting or storage.

When operating in a first, normal broadcast mode, frame store 22 receives a full resolution frame of video data from disk store 24 and outputs a continuous television image in digital data form in response thereto.

In a second, editing or browsing mode, CPU 16 commands disk store 24 to output reduced resolution image data which is selectively positioned in frame store 22 for viewing in one of 16 reduced size image positions in a 4×4 array as a mosaic which fits within a normal full size image. Under operator control, the 16 viewable images may be taken sequentially from disk store 24 starting with a selected image frame. This mode is useful when scanning all of the images stored by disk store 24. Alternatively, the 16 images may be taken randomly from a list of stored images developed by the operator. This mode is especially useful when it is desired to compare certain images.

The 16 image assembly time is greatly reduced because only an amount of data equivalent to one full size, full spatial resolution, image need be transferred from disk store 24 to define all 16 images. This is only one-sixteenth of the time that would conventionally be required.

While there has been shown and described above, a particular arrangement of an electronic still store system which can rapidly compose a multiple image frame of data, for the purpose of enabling a person skilled in the art to make and use the invention, it will be appreci-

ated that the invention is not limited thereto. Accordingly, any modifications, variations or equivalent arrangements within the scope of the attached claims should be considered to be within the scope of the invention.

What is claimed is:

1. An electronic still store system comprising:

an image store means for retrievably storing therein a plurality of image frame copies of video frames, the image frame copies comprising data representing full spatial resolution images and corresponding data representing reduced spatial resolution images of the video frames;

frame store means for receiving and storing in a first mode one of said full spatial resolution images from said image store means and for repetitively generating a full spatial resolution image output, and in a second mode for receiving from the image store means and storing a plurality of said reduced spatial resolution images each at selectively located different positions, the frame store means in the second mode further repetitively generating an image output comprising the stored plurality of said reduced spatial resolution images; and

size reducer means for receiving from the frame store means the stored full spatial resolution image and in response thereto returning to the frame store means a corresponding reduced spatial resolution image, wherein the frame store means receives and stores the returned reduced spatial resolution image while continuing to store the stored full spatial resolution image.

2. The electronic still store system according to claim 1, wherein the reduced spatial resolution images each have a spatial resolution of one-fourth the spatial resolution of the corresponding full spatial resolution image.

3. The electronic still store system according to claim 1, wherein said frame store means includes a central processing unit, controlled by an operator in said first mode for selecting which of said full spatial resolution images stored in said image store means is to be retrieved from the image store means, and in said second mode for selecting which of said reduced spatial resolution images stored in said image store means are to be retrieved and stored in said frame store means, and further for selecting the different positions within a video frame at which each of said retrieved reduced spatial resolution images is stored.

4. The electronic still store system according to claim 3, wherein said frame store means further comprises an output digital-to-analog converter coupled to receive output image data from the frame store means and in response thereto to generate an analog video signal representing an output image; and

a monitor coupled to receive the analog video signal and display the output image represented thereby.

5. The electronic still store system according to claim 4, further comprising a video input means for generating an input analog video signal representing an input video image and an analog-to-digital converter coupled between the video input means and the frame store means for converting the input analog video signal to a digital form such that digital data representing said input video image is received and stored by the frame store means.

6. A video still store system comprising:

external source means for supplying a full size image data set representing a full size image frame;

a size reducer coupled to receive the full size image data set for producing therefrom a reduced size image data set representing a corresponding reduced size image frame;

an image store for storing a plurality of full size image data sets representing a plurality of full size image frames and for storing a plurality of reduced size image data sets representing a plurality of reduced size image frames, each of said reduced size image data sets corresponding to one of said full size image data sets; and

frame store means for storing one of said full size image data sets from either the external source or said image store, wherein if said image store does not supply a corresponding reduced size image data set, said frame store outputs a copy of said full size image data set to said size reducer, and receives in turn a corresponding reduced size image data set;

wherein said image store stores the reduced size image data set along with the previously stored corresponding full size image data set.

7. An apparatus for storing video pixel data representing video images of a first resolution and, for each each of the images at said first resolution, a corresponding video image at a second resolution, comprising:

random access memory means for storing video pixel data representing one of a succession of full size images at said first resolution and a corresponding reduced size version thereof at said second resolution;

bulk memory means for receiving said video pixel data from said random access memory means and for storing said succession of full size images and the corresponding reduced size versions thereof, and for outputting upon a user's command, either a selected one of the successive full size images or selected ones of the corresponding reduced size versions thereof for direct transfer to, and storage back in, said random access memory means; and

means responsive to said random access memory means for selectively generating one of said corresponding reduced size versions from the respective full size image in said random access memory means, and for transferring the video pixel data representing and the corresponding reduced size version back to the contents of said random access memory means.

8. An apparatus for storing video pixel data as at least one full size image at a first resolution, and at least one reduced size image thereof at a second lower resolution, comprising:

random access memory means having an input port and an output port, for storing the video pixel data presented at the input port;

said video pixel data representing the full size video image at a first resolution being stored in a first group of memory locations in said random access memory means;

bulk storage memory for also storing the video pixel data and for presenting selected groups of video data at said input port for storage by said random access memory means;

size reducing means responsive to said random access memory means for directly receiving said video pixel data stored in said random access memory means representing said full size image at said first resolution, and for reducing said image to the re-

duced size image at the second lower resolution, and for supplying said reduced size image at said second resolution directly back to said random access memory means in a second group of memory locations therein;

control means coupled to said random access memory means, to said bulk storage memory and to said size reducing means, for causing said size reducing means to generate said reduced size image at said second resolution and to supply same to said random access memory means in said second group of memory locations; and

said control means further causing the transfer of the full size and reduced size video pixel data from said random access memory means to said bulk storage memory for storage, and for causing the selective transfer from said bulk storage memory directly into said random access memory means of either said full size image at said first resolution or said reduced size image at said second lower resolution.

9. The apparatus of claim 8 wherein said size reducing means produces said reduced size image at said second resolution with one fourth the spatial resolution of said full size image at said first resolution, and wherein said control means determines the transfer of said reduced size image at said second resolution into said random access memory means for storage at a selected one of 16 predetermined groups of said memory locations.

10. A system for storing video data representing video images which are displayable as rasters of vertically distributed horizontal lines, each represented video image normally occupying a raster of selected vertical and horizontal size, the system comprising:

a video image size reducer having an input for receiving video data representing a video image corresponding to the selected raster size and for generating video data representing a reproduction of said video image at a selected fractional-size of said selected raster size;

a first store for receiving video data for storage and for providing video data therefrom, said first store having a capacity for storing the video data representing the video image corresponding to the selected raster size simultaneously together with the video data supplied by said video image size reducer representing said reproduction of the video image at the selected fractional-size;

a second store for receiving and storing the video data stored in the first store and for providing video data therefrom directly to the first store, said second store further storing video data representing a plurality of additional video images each corresponding to the selected raster size, and video data representing a plurality of additional reproductions at the selected fractional size of said selected raster size; and

means for selectively transferring from said second store directly to said first store either video data representing of the plurality of video images corresponding to the selected raster size, or video data representing a plurality of reproductions at the selected fractional-size of said selected raster size.

11. A method of storing video pixel data comprising:

receiving and storing in selected storage locations in a random access memory, full video pixel data comprising a full size image;

generating from the full video pixel data, reduced video pixel data representing a reproduction thereof in the form of a reduced size image at a lower resolution;

storing the reduced video pixel data representing the reduced size image in additional storage locations in said random access memory along with the full video pixel data;

storing both the full size image and the reduced size image in bulk storage memory; and

selectively transferring either the full size image or the reduced size image from said bulk storage memory into said random access memory for further processing.

12. A video still store system comprising:

an external source for supplying a plurality of full size image data sets representative of corresponding full size images;

an image store for storing said full size image data sets, and for storing a like plurality of reduced size image data sets representing a plurality of reduced size images, each of said reduced size image data sets corresponding to one of the full size image data sets;

a memory for simultaneous storage of one of said full size image data sets and a corresponding one of said reduced size image data sets;

a size reducer means for receiving from said memory the stored one of said full size image data sets, and for producing and returning to said memory the corresponding one of said reduced size image data sets;

said memory being responsive to either the external source or the image store for storing said one of said full size image data sets, and for supplying to the image store both the stored one of said full size image data sets and the corresponding one of said reduced size image data sets;

said memory being responsive to the image store to store at different selected locations the plurality of reduced size image data sets;

said memory further supplying as an output image either the plurality of reduced size image data sets arranged at different locations within the output image, or the full size image data set; and

means responsive to said memory for displaying the output image as a raster scanned video display.

13. A method of storing video pixel data for access and display comprising:

providing data sets for a plurality of full size images at a first spatial resolution;

generating, from the data sets of the full size images, second data sets representing a corresponding plurality of reduced size reproduction images at a second lower spatial resolution;

storing both the data sets of the plurality of full size images and the data sets of the corresponding plurality of reduced size reproduction images in respective selected groups of storage location; and

selectively accessing from the storage locations a data, set representing one of the plurality of full size images, and a data set representing one of the corresponding plurality of the reduced size reproduction images, simultaneously.

14. An apparatus for storing video pixel data as at least one full size image at a first resolution, and at least one reduced size image thereof at a second lower resolution, comprising:

random access memory means having an input port and an output port, for storing the video pixel data presented at the input port;

said video pixel data representing the full size video image at a first resolution being stored in a first group of memory locations in said random access memory means;

bulk storage memory for also storing the video pixel data and for presenting selected groups of video data at said input port for storage by said random access memory means;

size reducing means responsive to said random access memory means for receiving said video pixel data stored in said random access memory means representing said full size image at said first resolution, and for producing reduced size pixel data representing the reduced size image at the second lower resolution, and for supplying said reduced size image at said second resolution to said random access memory means in a second group of memory locations therein;

control means coupled to said random access memory means, to said bulk storage memory and to said size reducing means, for causing said size reducing means to generate said reduced size image at said second resolution and to supply said reduced image to said random access memory means in said second group of memory locations;

said control means further causing the transfer of the full size and reduced size video pixel data from said random access memory means to said bulk storage memory for storage, and for causing the selective transfer from said bulk storage memory into said random access memory means of either said full size image at said first resolution or said reduced size image at said second lower resolution; and

wherein said control means also determines the selective transfer of said reduced size image at said second resolution from said size reducing means into said bulk storage memory via the random access memory means.

15. A method of storing video pixel data for access and display comprising:

providing data sets for a plurality of full size image at a first spatial resolution, wherein each one of the full size images occupies upon display a raster of selected vertical and horizontal size;

generating, from the data sets of the full size images, second data sets representing a corresponding plurality of reduced size reproduction images at a second lower spatial resolution;

storing both the data sets of the plurality of full size images and the data sets of the corresponding plurality of reduced size reproduction images in respective selected groups of storage locations;

selectively accessing from the storage locations a data set of one of the plurality of full size images, and one of the sets of the corresponding plurality of the reduced size reproduction images simultaneously;

wherein the step of accessing further includes, retrieving a plurality of reproduction images, storing the retrieved plurality of images in a random access memory, and outputting the stored plurality of retrieved images as a mosaic of reproduction images occupying a raster of the selected vertical and horizontal size.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 4,821,121
DATED : April 11, 1989
INVENTOR(S) : Daniel A. Beaulier

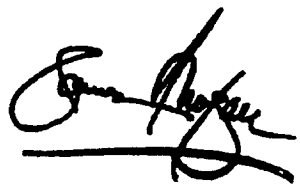
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 6,
Line 46, please delete "and"

Column 8,
Line 61, please delete ","

Signed and Sealed this

Fourth Day of March, 2003



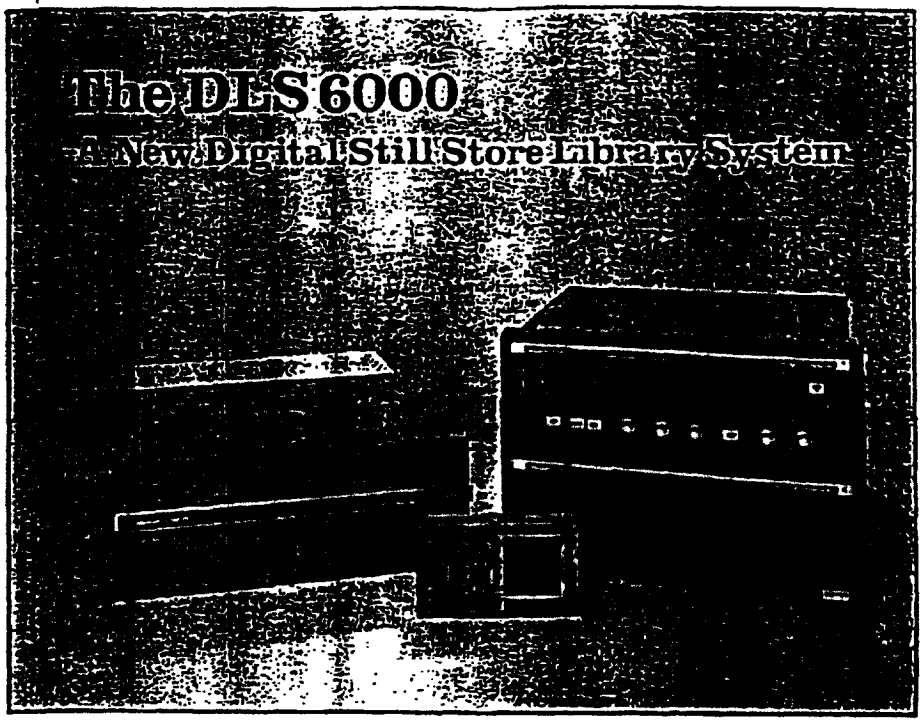
JAMES E. ROGAN
Director of the United States Patent and Trademark Office


TRADEMARK

EXHIBIT 2

360 : 5.1 S0466 0079

The DLS 6000
A New Digital Still Store Library System



by Hugh Boyd,
Quantel.

The Quantel DLS 6000 Digital Library System was first introduced to broadcasters at private demonstrations held during last year's NAB and Montreux exhibitions. At that time, the product was still under development, and Quantel were seeking comments from their invited guests as to the final configuration of the DLS 6000. The proferred advice was considered sufficiently valuable by Quantel engineers for some of it to be included in the ultimate system design, which will be demonstrated publicly for the first time at NAB 1980.

The DLS 6000 represents a new generation of still stores for television broadcasting. The system provides not only significant improvements in basic performance over existing techniques, it also offers several unique facilities that make the unit a complete production tool. At only 10.5 inches high for the DLS 6000, and 7 inches high for the storage disc unit, the system is ideally suited for OB van use as well as in the studio.

The Digital Library System is a naturally evolutionary product to come from the Quantel stable. It is revolutionary in concept and is based on a solidly engineered, flexible piece of hardware utilising three framestores and a DEC LSI-11 minicomputer. Typically, the DLS 6000 embodies

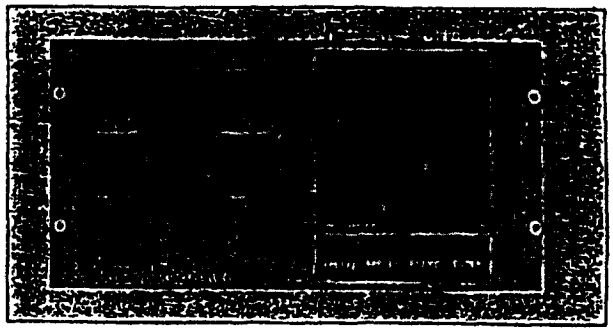


Figure 1. The DLS 6000 Control Panel

Quantel's basic principle of expandability by retrofitting new options as they become available. The word "obsolete" does not exist in the Quantel vocabulary!

Infinite Storage Capacity

The disc unit has a picture capacity of up to 340 stills. With multiple disc operation, say ten discs, 3400 pictures would be randomly accessible. However, the number of discs allowed is wisely unlimited, but is is anticipated that broadcasters requiring very large library storage will avail themselves of a video tape back-up store — a unique feature of the DLS 6000. Because the data is transferred in digital form, there is no loss of quality. Picture information can be transferred automatically from disc to a standard video cassette or reel-to-reel machine without it being modified, whether it is in use in a studio or OB van.

Transfers from tape to disc work in exactly the same way, therefore a cassette is all that is required to move information between locations. Similarly, a full archival store library can be formed from cassette or tape with more than 3000 pictures being stored on one tape. Again, being digital in format, no generation losses are seen no matter how many times the information is recorded or re-recorded.

INTERNATIONAL BROADCAST ENGINEER (GB)
Vol. 11, no. 170 (MAY 1980)

USE 358-128 XR 360-34

Production Effects Capability

The provision of a number of production effects seems to be a logical facility for a Quantel framestore-based product. The DLS 6000 has this integral feature for very practical reasons.

Picture repositioning is achieved by the simple movement of a joystick on the compact 8" x 4" control panel (Figure 1).

Picture compression is also achieved by moving a joystick. The stored image may be reduced to any size between normal (full frame) and virtually zero size. This feature, when used with repositioning, defines the exact size and position of a still without employing any other digital effects system.

Picture enlargement. Joystick movement enlarges the image up to two times to allow selection of a chosen portion of a still.

Variable aspect ratio. The aspect ratio of the image can be varied from the normal 4 x 3 to any rectangular shape.

Multiple picture handling. The DLS 6000 is capable of reproducing as many pictures as are wanted at the same time. This facility is clearly an adjunct to compression and repositioning. It is used either to show, at the same time, a number of participants in a discussion or event, or even to build up a complete montage of images. The pictures can be called down from the disc one at a time to show the viewer the build up, or can be called simultaneously so that only the finished composite is broadcast.

Borders. The DLS 6000 is equipped with its own border generator capable of changes in hue, saturation, luminance and width. Borders can be placed around all pictures being shown if desired, although different images can have quite different border parameters at the same time. The border generator also includes a background or matte generator, further releasing the mixer for other functions.

Extensive Operating Features

Both the technical director and the system operator were kept very much in mind by Quantel when designing the Digital Library System. Each has a computer display panel, with the director's being associated with the mixer and almost always used for replay. Whereas, the panel the operator (or "composer") uses, will be essentially employed for recording. The DLS 6000 is capable of single or two person operation, so two control panels may access the machine simultaneously for *time sharing*.

High change rate. Pictures can be changed at a rate of two per second with complete random access. Thus, no cache memory of the day's programme requirement has to be prepared.

On-air picture change. Although the change rate is limited to two per second, the additional framestore circuitry in the DLS 6000 allows vertical interval switching between pictures. The switch is instantaneous: only the throughput rate is limited to two per second.

On-air transitions. When using the DLS 6000, a mix/effect bus can be eliminated by utilising the digital transitions available in the unit. Changes between one picture and the next can be by means of a simple cut, a programmable dissolve, or even a wipe.

Multiple outputs. Three outputs are available with the DLS 6000 – two programme and one preview. Internally generated transitions are possible with both programme outputs, or they can be used together to utilise more exotic wipes in a mixer. Keys are generated by the system to match the picture at all times.

Preview. The DLS 6000 has its own preview output which can be operated without affecting the on-air programme or transitions. The preview allows the varying sizes or positions of images to be chosen by means of cross wires controlled by joysticks, and also contains the fast viewing or "browse" feature.

Browse. The preview facility has the ability to look through the contents of the disc by displaying 25 images at a time, and slowly moving them down the screen. This rolling list of pictures allows easy viewing to find a desired frame, or alternatively, permits the showing of pre-chosen slides waiting in the "stack" for display during a programme.

On-air editing. As previously mentioned, the on-air display or transition is unaffected by previewing. Similarly, the DLS 6000 permits the capture and recording of incoming material while the equipment is being used during a broadcast. This is an essential feature to get the full benefit of the system in a news studio situation.

Asynchronous operation. The input of the Digital Library System can handle asynchronous information to allow stills to be captured from incoming ENG material.

Graphics handling. The DLS 6000 is capable of keying stored graphics over displayed images, thereby releasing the mixer from this function. Graphics may have their size and position defined quite independently of picture information, always assuring perfect readability for all sizes of titled images.

Digital re-recording of composite pictures. Composite pictures created on the preview monitor can either be stored as control parameters to ensure recall on demand on the programme outputs, or alternatively, can be re-recorded back onto disc as a complete new picture at an individual location.

Editing system. Complete sequences of commands to the DLS 6000 can be set up and stored for simple single button operation during a programme. The editing system does, however, allow simple addition or deletion of items to ensure ease of operation in a fast moving news broadcast. The minicomputer in the system will permit the addition of standard computer peripherals at a later date to accommodate even more powerful editing equipment.

Control delegation. As previously stated, the control of the DLS 6000 can be time-shared between several stations including during a live broadcast. Separate preparation and replay panels permit the technical director to remain divorced from the recording of stills from incoming ENG material.

Obviously, the basic task of the Digital Library System is to replay the correct picture from the disc store. However, the usefulness of the system is greatly enhanced by the ability to choose the size and position of the replayed picture, and to define it in accordance with the requirements of the rest of a production. The Quantel tradition of high fidelity is maintained in the quality of the images produced by the DLS 6000 at all times, whether the size of the still has been modified or not. At all sizes and shapes, the unit displays excellent image quality, with-

GROUP 123

SLIDE	PICTURE	SIZE & POSITION	BORDER	TRANSITION	CUE
0	23	NORMAL	ON	DISSOLVE	20
1	18	COMPRESS	OFF	CUT	
2	14	ENLARGE		WIPE	10
3					
4	36	COMPRESS		SUPER	INSTANT
5	100	COMPRESS		SUPER	
6	33	COMPRESS		CUT	
7					
8	11	NORMAL		CUT	EXT
9	30				

NEXT GROUP 130

Figure 2. An example of a typical Edit Display (as would appear on the TV monitor).

out showing any hint that the video has been processed.

The Control System

The philosophy behind the control system for the Digital Library System is based on the concept of Pictures, Slides and Groups. A Picture is defined as an image on disc and has a number allocated to it at the time of recording. Pictures are normally recorded on disc at full size to give maximum flexibility on replay. A Slide is a Picture on replay that has the parameters of size, position, transition type and time, etc, allocated to it. The number of a Slide need not be the same as the number of the Picture that the Slide depicts. A Group is a collection of up to ten Slides.

It is essential to appreciate that, with this machine, defining a still merely by a number is insufficient due to the extra facilities available. Therefore, both the still and what is to be done with it must be defined before displaying on the programme output. The computer display. The extra degree of freedom made available by the DLS 6000 production features, make it necessary that at both preparation time and programme time, the operator always has a clear picture of exact machine status. In order to give the user this clear indication of the situation, a video display system has been added to the host computer, and it is via this display system that all setting of parameters is achieved.

The computer display output is added to the preview output, and hence, shares the preview screen. There are three types of computer display available to the user: Edit, Ident and Menu. A cursor display is added to all these to allow the size and shape of images to be defined on the preview monitor.

A Typical example of the Edit display is shown in Figure 2. It will be seen that the Slide number is independent of the Picture number as has been described earlier.

The Ident display overlays the true Picture number when using the "browse" feature, so that the various chosen Pictures may be easily identified.

The Menu display is a special option that allows selection of modes of use of the machine, and it is this display that is used in conjunction with the tape backing store system.

The recording chain is shown at the top of Figure 3. Input video enters the system and is immediately converted into digital format and passed to a framestore at full video data-rate. This input framestore acts as a freeze frame device and allows the user to select still pictures from the incoming live video. For simplicity, the link from the output of this store to the preview output from the DLS 6000 has not been shown, but in reality, the video follows this path allowing the user to observe the incoming picture at all times, whether live or frozen.

Once the chosen image has been frozen in the framestore it is read out from the store at disc rate via a data processor section to further reduce data rates, and then via the disc formatter to block the information suitable for writing onto the disc.

The disc itself is a latest generation Winchester drive high packing density sealed unit. The heads are of the flying type, but the construction of the disc eliminates the need to have expensive and unreliable head retraction mechanism — the heads actually land on the disc surface when the platter is not in motion. The disc data rate allows a picture to be generated in 0.5 seconds. The total package is highly reliable and rugged and includes parity check circuitry for optimum data integrity.

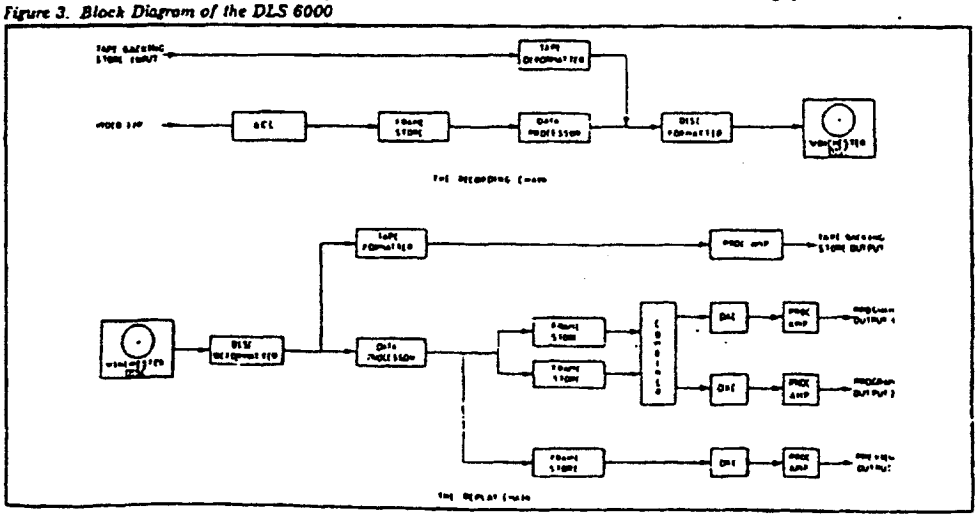
The replay chain, shown at the bottom of Figure 3, is obviously more complex than record due to the increased number of framestores and programme output facilities. Data from the disc passes through a disc re-formatter where the information is sorted out from its blocks, and then onto the data processor where it is unpacked. At this point, the information is passed to one of the three framestores available, and it is now that the size change mechanism operates. If the information is routed via the preview store, no other processing is done other than reading it out of the store at full video rate into a DAC and onto the display via a proc amp. If the data is fed to one of the programme stores, it is subsequently passed to a digital combiner assembly that performs the appropriate wipe, cut or dissolve functions. Also, the combiner copes with the addition of borders or the keying of caption information over pictures or coloured matte.

For convenience, one framestore is shared between the video input facility and the preview output. Not shown in Figure 3 is the host DEC LSI-11 minicomputer that controls the whole machine and is responsible for all housekeeping tasks, the operation of the control panel and the editing system.

The tape backing store system is interfaced to the disc before and after the disc formatter and de-formatter. The information on disc has to be prepared and re-blocked by the tape formatter prior to the addition of syncs and burst for feeding to the tape system. It should be remembered that the tape system is perfectly conventional, and can be any recorder available in the studio or OB van.

When receiving information from the tape backing store, information is unpacked and blocked in a tape de-formatter before being passed on to the disc. The DLC 6000 Digital Library System is available in NTSC standard. But, as usual with Quantel, it is reasonable to assume that PAL and SECAM versions are already being developed. When they are introduced, one can expect even more flexible facilities to be unveiled, and naturally, none of them will make any other part of the existing system obsolete. ■

Figure 3. Block Diagram of the DLS 6000



been used with success for news broadcasts.

The ESS in Operation

A new graphic is prepared by a graphic artist, an example being the map in preparation as shown in Figure 4. Placed on the electronic graphics stand, the operator at the Master Access Station seen in Figure 3, by depressing a single button, causes the still to be recorded, and a display shows the disc pack in which it has been recorded and the particular track used.

Other stills to be used may be already recorded. By assigning access of the system to a conveniently located Remote Access Station, the producer or director may view any number of stills — a process of browsing through the archives — and select those which are to be used in the upcoming news broadcast. Each selected still is identified by a five-digit number given to the Master Access Station operator.

Next, a proposed sequence of plays is established and the operator now moves to record the stills in sequence on 64 tracks reserved for that purpose in each of the disc packs. The address of each still is entered on the keyboard and the system then effects the transfer of the still to its new position in the programme sequence tracks.

During the broadcast, a Remote Access Station is used in the programme control room. From here the operator calls up each sequential still by depressing a single button. The next two stills to be played are displayed on the control room monitors and are "taken" by the technical director as needed.

The ESS as a Production Tool

In addition to the use of graphics as an input, the ESS can 'grab' any required frame from a video signal and record it.

Independent video playback channels are provided for each of the disc drives. At the control room video switcher, or at the Master Access Station, these outputs may be superimposed, matted, or cross-faded. In this way composite stills may be built electronically.

"Splats" may be added to broadcast a composite picture. Thus, a map may be recorded in the ESS. The map is then recorded again, and a white "splat" superimposed by means of a transparent overlay. When the two slides are played back sequentially on air, the "splat" seems to appear instantaneously on the map.

Figure 3. Internal Access Station.

Figure 4. Graphics in preparation.

In all these production-building techniques, electronically-generated captions may be added to the composite picture as required.

When election results are being displayed and continually need to be updated, these graphic-building techniques are invaluable. As later election statistics become available, the new numbers are entered in place of the old ones and the new still is recorded and played to air.

A recent addition to this system is the slow motion feature. For this purpose two empty disc packs are loaded on the drives and can be used to record 1632 frames of sequential video — 54 seconds. This material, or any part of it, may be played back at any speed with a joystick control, even freezing a particular frame for a while if required. This playback may then be recorded on videotape for later broadcast.

Summary

CBS News in New York now has two ESS systems in operation, and some 11000 stills in the disc pack archives, serving the needs of seven different news programmes which together provide 15 hours of new broadcast each week. The creative possibilities of the ESS system will be used increasingly in other programming fields such as sporting events.

The Ampex ESS systems in operation at CBS have proven to be a powerful, efficient and fast acting production tool, giving new dimensions to the creativity and variety of graphic displays for television. ■

The Ampex ESS-2, System Outline

The ESS-2 is an advanced digital recording system that stores thousands of images. By using computer type disc recording techniques the system offers variable record and playback speeds and provides control of video action in forward or reverse while maintaining a broadcast standard picture. It eliminates the need for cumbersome and inefficient files of 35mm slides and graphics.

The production system is accessible through the keyboard controls at the electronics rack or at up to eight remote locations. Each panel is equipped with a keyboard and an alphanumeric readout. Access time from any station is less than 70 milliseconds, worst case.

The ESS-2 is offered in one, two or three drive formats. A single drive system allows storage of up to 814 stills or up to 27 seconds of real-time recording (or a combination of the two). The addition of a second disc drive creates even greater storage while a triple drive installation can hold up to 2442 stills or 81 seconds of real-time video action. Total on and off-line image capacity, using up to 98 disc packs, is 79,772 stills.

Action sequences and still images are recorded in colour or monochrome and stored in the memory with addresses consisting of the channel number, disc pack number and track number. There are 815 tracks in each disc pack, 749 of which are dedicated to storage of action and images. The additional 66 are reserved for storage of sequence lists and internal functions.

By keying the correct address, segments or stills can be called up from the memory. In less than 70 milliseconds the image or sequence is on the monitor to permit rapid review and the update of the stored files at any time. Individual segments are called up from the memory and copied to a sequence list to assemble a programme. The material can then be played on command at a later date either manually or by the station's computer.

Once assembled in sequence, stills are switched during the vertical interval so that access time is virtually instantaneous. The programme remains as a list that can be played once or as many times as needed, edited, modified and then erased. The original material from which the sequence or programme was assembled remains in memory for as long as desired.

While it is unlikely that all access terminals will be in use simultaneously, adequate provision for access control is incorporated. Access priorities can be assigned in any manner desired, depending on the number and location of terminals and the operating requirements of the facility. A key operated lockout feature provides file protection by preventing inadvertent or unauthorised erasure of any stored material.

Readers should note that the ESS-2 is presently available in NTSC only.

EXHIBIT 3

VOLUME: I

PAGES: 1-146

EXHIBITS: 40-52

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

- x

AMPEX CORPORATION,

Plaintiff,

v. Civil Action

EASTMAN KODAK COMPANY, ALTEK CORPORATION and CHINON INDUSTRIES, INC., No. 04-1373-KAJ

Defendants.

- x

VIDEOTAPED DEPOSITION of RICHARD J. TAYLOR

April 28, 2006

9:38 a.m.

Ropes & Gray LLP

One International Place

Boston, Massachusetts

Reporter: Michael D. O'Connor, RPR

Page 46

Q. Again, does this document explicitly disclose the storage of a reduced-size image in the Paint Box?
A. It describes cut and paste mode, cutouts can be resized, rotated and moved around other pictures before fixing them in position, and it also refers to a library that can hold a fund of pictures to assist the artist.
Q. On Page 20, Paragraph 60, you describe the browse function of the Paint Box. Did the browse function of the Paint Box, and I think you've -- strike that. In the video you showed the ability to go from a particular reduced-size image in the browse screen to the corresponding full-sized image, right?
A. Yes.
Q. How was that done in the Paint Box?
A. You would click on the browse image with a pen.
Q. So you position the stylus on just like you do anything else, and click on it that way?
A. Yes.
Q. How did the machine know what image to pull up, what full-sized image to pull up?

Page 47

A. I don't actually know. I don't know the detail for sure.
Q. When you went in to browse, was the particular set of 12 images that were displayed related to -- how did you determine which 12 images to display?
MR. SUMMERSGILL: Objection.
A. Normally that was done with a search field. So you would define in the library particular titles or context of titles that you wanted to find.
Q. So the results of the search would be displayed starting at the beginning, 12 images at a time?
A. Starting at your chosen search field, yes.
Q. Was there a way of displaying everything that was stored on the machine from beginning to end?
A. I don't know. I can't see why you would want to do that, so I don't know.
Q. On Page 22, Paragraph 66, you refer to a disk data buffer. Do you see that?
A. Yes.
Q. I'm going to place before you an exhibit previously marked as Taylor 14, a rather thick

Page 48

operating and service manual. If you could turn to Page 46, which is the last three digits 685 of the production number entitled "Chapter 4 DPB 7000/1 System Overview."
A. I don't seem to have a Page 46.
Q. If you go to the EKC number, the last four digits 1685. It's towards the beginning of the document.
A. Here we go.
Q. This is a general system overview for the Paint Box circuitry; is that right?
MR. SUMMERSGILL: I'm sorry, could I get the question again.
(Reporter read back pending question)
A. Yes.
Q. On the right-hand column, first full paragraph it says, "Pictures are stored by the system on Winchester disks via NSMD interface. The disk sequencer card controls the seek and data transfer operations. The computer has access to directory information on the disk via the disk beta buffer, which can hold data from a whole track. Picture data can be transferred from the disk directly to any of the frame stores. The data is

Page 49

deserialized on the disk data buffer card but bypasses the buffer and passes through the filter card on the brush bus."
Isn't that saying that the disk data buffer itself is not used for data transfers between the disk and the frame store, it's only used by the computer to write directly to the disk or read from the disk?
A. The disk data buffer in the Paint Box was a derivative of the disk data buffer on the 6000 still stores. But the Paint Box, it had to be larger, so the data buffer -- there wasn't room for all of the buffering required. So some of it got shunted off, but in essence, the disk data is being buffered, though it's buffered -- what this says -- in the filter card.
Although, interestingly, the data could also go into memory that was on the actual disk data buffer card itself. So conceptually, yes, the disk data buffer. Was it that particular card? No. But essentially it is the disk data buffer. It's just that the memory is put into different places because of lack of space.
Q. How much data did that buffer hold?

Page 50

A. I don't remember, I'm afraid.
Q. If you could turn to Page 92, which is EKC, last four digits, 1730, there's a more detailed description of the disk data buffer card.
A. Could you give me the EKC number again?
Q. The regular page number is 92 and the production number ends with 1730.
A. I have that.
Q. The introduction of that description says, "This card provides parallel for serial conversion for writing to the disk serial-to-parallel conversion for writing from the disk and formats disk data under the control of the disk sequencer. In addition to these functions, this card has a data buffer which has sufficient capacity to store one complete disk track of data. This is used to give the control computer access to the data stored on the disk and also to enable the computer to write data, such as directories, onto the disk."
So is it correct that the buffer being referred to that can hold one disk track of data is not used when you're writing from frame store to disk or vice versa, but rather, this card is just used to convert from parallel to serial or serial to

Page 51

parallel?
A. As I say, we moved the buffer outboard of this particular card, because the card ran out of space.
Q. Well, my question is narrower. The specific data buffer referred to here, that's on this card, which holds one disk track of data, is not being used -- is not used for the transfers of data between frame store and disk or vice versa; is that correct? Is my understanding correct?
A. I think there were circumstances when it was, but in the -- I think there were circumstances when it was.
Q. What circumstances were those?
A. If the computer wanted access to the video data itself, the normal use, it would go to the buffer outboard of the card.
Q. Well, when the cut and paste operation is being performed, and the data is being read from the disk into the frame store via the filter card, is it correct that this buffer being referred to on this page is not being used?
A. No. It's used in the outboard buffer.
Q. Where did you say the outboard buffer was?

Page 52

A. That's on the filter card.
Q. Okay. If you could turn to page EKC, last four digits 1749. Is that a block diagram of the filter card?
A. Yes, it is.
Q. Are the buffers you referred to the blocks labeled "Horizontal Buffer" and "Line Buffers" that appear on that block diagram?
A. Yes, specifically the horizontal buffer.
Q. So first, there would be a number of pixels that are filtered, that are held in the horizontal buffer; is that correct?
A. As the data came off the disk, it would be stored in the ram that was the horizontal buffer.
Q. Is that a ram or is it a latch?
A. That is, I believe, a ram.
Q. How many bytes of data does it hold?
A. That I don't know, I'm afraid.
Q. Can you identify that component on the schematic which is on the next page, last four digits 1750?
A. I believe that's the components in the top left-hand corner.
Q. The ones labeled AH, BH, AG and BG?

Page 53

A. Yes.
Q. On the component list those are listed as 27 SOPC. Do you see that? That's on Page 113?
A. Yes.
Q. Do you know what that stands for or what that designates?
A. I'm afraid not, no.
Q. Then there's also a vertical interpolation that involves line buffers; is that correct?
MR. SUMMERSGILL: Objection.
A. The data coming off the disk was buffered in those components I've just said. Yes, there are other buffers in the card, but the components that I've just mentioned buffered the data coming off disk.
Q. If I understand your testimony, you don't know how much data is buffered; is that right?
A. No, I don't, I'm afraid.
Q. Do the line buffers buffer entire lines of video data?
A. Yes, they did.
Q. And are those shown on the schematics, sort of in the center, chips HD, GE, HF, GF, HG and I believe it's AG, but it's not clear? Are those the

Page 54

line buffers?
A. I think that's correct, yes.
Q. So it holds six lines of video data?
MR. SUMMERSGILL: Objection.
A. I'm not sure -- no, I'm not sure it's saying that.
Q. So you don't know how many lines it holds?
A. No.
Q. In Paragraph 71, which spans to Pages 23 and 24 --
A. Are you finished with this?
Q. I think so. So go to Page 23 and 24, Paragraph 71. Towards the end of that paragraph on the top of Page 24 you say, "But if it were used to browse full-sized images that were stored on disk, it would automatically reduce the size of those images as they were pulled off disk and display them as a montage of reduced-size images."
MR. SUMMERSGILL: He's reading from Page 24.
THE WITNESS: Yeah, I'm looking at Page 23.
MR. SUMMERSGILL: You're welcome to look at 23 and 24. Look at whatever you need to understand the question, once there's a question.

Page 55

A. Could you repeat the question, please?
Q. I was just calling your attention to the sentence at the end that says, "But if it were used to browse full-sized images that were stored on disk, it would automatically reduce the size of those images as they were pulled off disk and display them as a montage of reduced-size images."
My question is, isn't that what's described in Column 1 of the '121 patent? I will place a copy of the patent before you which was previously marked as Exhibit 1, and call your attention to Column 1. For example, starting at Line 34 through Line 43, and also the reference to the '776 patent at Lines 50 through 54. Isn't that the precisely the browse functionality that the patent is saying is in the prior art?
MR. SUMMERSGILL: Objection.
A. I think you asked me a context question. Shouldn't you be asking me about the bottom of Page 23 if you're going to ask the question you just asked?
Q. I'm asking the sentence about browsing full-sized images on the top of Page 24.
A. Column 1 of the patent describes browsing a

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full-sized image -- sorry, taking a full-sized image and reducing its size on the fly. But my comment here is also taken with the previous sentence, which is saying that if it's browsing reduced-size image that already existed on the disk, it did not change its size, and that most definitely is not included in Column 1 of the patent.
MR. BEAMER: We have to change the tape, so maybe we should just take a break and come back.
VIDEOGRAPHER: The time is 11:42 a.m. This is the end of video cassette number one, the deposition of Richard Taylor. We are off the record.
(Recess)
VIDEOGRAPHER: This is the beginning of video cassette number two in the deposition of Richard Taylor. We are back on the record.
By MR. BEAMER:
Q. I place before you a copy of Taylor patent 40302776, previously marked as Exhibit 32 at your earlier deposition. Is it correct that this patent describes the circuitry of the DLS 6000 still store?
MR. SUMMERSGILL: Objection.
A. That's a very sweeping statement. I don't

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think it describes all the functionality of the 6000, no.
Q. There's some overlap; would you agree?
A. Yes.
Q. On Figure 15, is that a description of the horizontal interpolation circuitry of the 6000?
MR. SUMMERSGILL: Objection.
A. Do you have a copy of the 6000 manual, please?
Q. Yes. I believe before you Taylor Exhibit 6, which is the service manual for the DLS 6000, and I will call your attention to the filter card at Page 75, which is EKC, last four digits, 2901.
A. I need to do some more work to look at this, but, no, I don't think it is the same, because I think the filter card in the 6000 itself handled decoded data, and I think this is an interpolation designed to handle 4FSC data. If you look -- let me find it for you.
I think this patent is describing changing the size of an encoded picture, and I think the 6000 used a decoded.
Q. Well, on Figure 5 of the patent, in the box labeled "Size Change Process," there's a box 34

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"Decode," and it says that -- indicating before reaching the interpolators, it's decoded.
A. Yes, you could be right.
Q. In any event, whether or not it's an identical circuit, they share the following trait, namely that there's a data buffer that buffers some number of bytes at the input side; in Figure 15 it's box 80, right?
A. What is 34?
Q. Excuse me?
A. I said, what is 34 that it receives the information from? Oh, that's the decoder. Okay. Sorry. Now I've lost your question.
Q. Is the data store ram, box 80 in Figure 15, a buffer that holds some number of bytes of video data for use in the horizontal in interpolation process in the size changer?
A. In this particular diagram, it is, yes.
Q. On Column 9, do you see starting at Line 39 there's a description of Figure 15; do you see that?
A. Yes.
Q. And at Line 41 and 42, it says, "Data is received at the input to data store ram 80 and desired samples are held by this store," and it goes

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on to describe that. That's a reference to the block we were just looking at, right?
A. Data is received from the decoder. If you look it says "data in from 34," and that's coming in from the decoder, which came from the 2 FSC to 4 FSC converter.
Q. Further down at Line 46 in Column 9 of this '776 patent, it says, "The data store 80 effectively holds a stack of data each from a picture point sample. This stack, say eight samples, is sequentially made available under the address control 87 to the input of multiplier 81, where it is multiplied by a desired coefficient, provided by coefficient store." Does this also describe the corresponding operations in the Paint Box and the 6000?
MR. SUMMERSGILL: Objection.
A. No. Sorry, you're wrapping all sorts of things up there. The buffer we were discussing earlier was buffering the -- sorry, in previous session we were discussing -- was buffering the information coming off disk.
Here we are holding data, which is coming from the decoder, and I've already explained that

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the Paint Box and the 6000 also worked in different ways.
Q. Didn't the buffers that we were looking at on the data, on the filter card, also come from a decoder?
A. No, definitely not.
Q. Well, I see on, at least for the service manual of the 6000, which is Taylor Exhibit 6, there is a general block diagram at UKC, last four digits, 2861. If you could turn to that. I see a decoder feeding disk data to the filter. So isn't that the same as what's happening in the patent?
A. The previous question you asked wrapped up Paint Box and DLS in the same sentence, and I was referring to our conversation about the ram in the Paint Box which is sitting -- taking information coming off the disk.
Now that your conversation is now complete, we can now talk about the 6000 where the data store ram you were referring to is receiving information from the decoder, and this decoder is taking the encoded information on disk and turning it into illuminance and chrominance.
Q. I will modify my question just to be

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limited to the 6000. Would this section in the patent in Column 9, which talks about the data store holding a stack of data, each from a picture point sample, is that also a correct description of the corresponding data store on the filter card of the 6000?
MR. SUMMERSGILL: We are still referring to the '776 patent?
MR. BEAMER: Yes.
A. Yes, this is describing the size change process after the decoder, yes.
Q. It says here "Say eight samples, i.e., for example, eight samples." Is that actually how many samples that the 6000 held in that data store?
A. I would have to check that. What page did you say the filter card was?
Q. On Page 75. Not a very detailed description, though. I'm sorry, strike that last comment. I see a reference in the left-hand column to a seven point picture block. Is that what the data buffer actually held for the 6000?
MR. SUMMERSGILL: What page are you on?
MR. BEAMER: Page 74, last four digits 2901 of Exhibit 6.

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Q. Left-hand column, third paragraph says in parenthetical, "As the horizontal filter operates over a seven picture point data block."
A. Yes. I would need to check, though, whether the ram -- to answer your question accurately, I would need to check whether the ram only held those eight points or whether it held more.
Q. Well, if you have a way of checking that, I would appreciate it?
A. I need to check the components, but it looks as if the ram was larger, but only the bottom three bits addressed were used.
Q. From that, do you conclude that the ram held no more than eight bytes?
A. It was capable of holding more, but it looks like it only held eight, yes.
Q. So during the size change process of the 6000, there would be a filtering of eight picture points in the horizontal direction to achieve size reduction; is that right?
A. Yes.
Q. That's also was being described in Figure 16 of the '776 patent?

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A. Did you say Figure 16 or 15?
Q. I meant 15.
A. Sorry, I can't see that Figure 15 doesn't mention the size of the number of taps on the filter.
Q. Well, in Column 9, there is a description of the stack being, for example, eight samples. It says "This stack, say, eight samples" at Line 47?
A. I will agree with what you're saying in Column 9, but Figure 15 by itself doesn't say that.
Q. The figure, together with this description, shows a ram in the size reducer that's holding, for example, eight pixels of picture data as part of the size change process, right?
A. Yes.
Q. Then in Figure 16 there's a description of a vertical interpolation process that holds four lines of video data in ram, correct, and that's described in the patent at Column 10, starting at Line 9?
A. Yes, this describes the vertical interpolator.
Q. In the 6000, the filter card description, if you still have that before you, Page 75 of

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Exhibit 6, on the right-hand column there's a reference to four line stores, which, together with the incoming data, allowing for filtering over five lines. Is that a similar use of line stores to achieve vertical in interpolation?
A. Yes.
Q. How does that compare to the ways the size changing process in the Paint Box works; is there also a ram for a horizontal interpolator and some number of line stores for a vertical interpolator?
A. Yes. The difference between the 6000 and the Paint Box is the 6000, upstream of this, there was ram buffering the disk in the Paint Box, a horizontal ram actually buffered the disk as well in the interpolator.
Q. I told you I was done with the Paint Box service manual, but I think we'll have to go back to it. First, let's look at the filter card, which doesn't have as much of a description, and it's on Page 112, last four digits 1747 of Taylor 14, but it does have a block diagram and a schematic.
My question was directing you to this card and asking you to compare the buffers on this card with the components we've just been looking at in

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the '776 patent and in the filter card of the 6000.
Am I correct in associating the horizontal buffer of the filter card of the Paint Box as having the same function as the ram that's shown on Figure 15 of the patent, namely that it holds some number of bytes of video data for use in horizontal interpolation?
A. With a notable addition, that it's also buffering disk. The difference is that the information on disk in the Paint Box was already decoded, and therefore, this buffer had to do two jobs; it was holding the information if you wanted to filter it, it was also buffering the information off the disk.
In the case of the still store, there was a lot of stuff upstream, and there was other things doing the buffering for the disk.
Q. Can you tell from the schematic for the filter card of the Paint Box manual, last four digits 1750, how big that buffer was?
MR. SUMMERSGILL: The last digits 1750.
A. Yes. I can see four address lines going in. So that would suggest to me that it's 16 bits of ram.

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Q. Now, in the 6000 service manual, if you turn to Page 28, which is the last four digits 2859 --

MR. SUMMERSGILL: What were the four digits?

MR. BEAMER: Exhibit 6, 2859.

Q. There's a reference in the last few sentences on that page to "The computer needs to store certain information on the disk to enable it to perform leader operations correctly (disk directory, titles, stacks of picture numbers, et cetera) a route is thus made available from computer to disk via buffer on the disk data buffer by means of which such information is handled."

Is my interpretation correct, just as for the Paint Box, the buffer on the disk data buffer card is only used by the computer and not by the process of size reduction?

MR. SUMMERSGILL: Your question is for the Paint Box or for the DLS?

MR. BEAMER: For the DLS 6000.

MR. SUMMERSGILL: I believe you said Paint Box in that question.

MR. BEAMER: I said is my interpretation

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correct just as for the Paint Box. The 6000 operates in that manner.

MR. SUMMERSGILL: Objection.

Q. Let me also point you to the description of the disk beta buffer card at Page 57, last four digits, 2884, which in the beginning says, "This card provides parallel-to-serial conversion for writing to the disk, serial-to-parallel conversion for reading from the disk, and formats disk data under control of the disk sequencer. In addition to these functions, this card has a data buffer which has sufficient capacity to store one complete disk track of data. This is used to give the control computer access to the data stored on the disk and also enables the computer to write data, such as directories, onto the disk."

That, plus what I pointed you to on the other page, 28, I interpret to mean that the buffer does not play a role in the size reduction process, and I'm asking you to tell me whether or not you agree with that interpretation?

A. I don't agree, and I'm trying to find the appropriate reference. There is somewhere a reference in here which goes on to say that the

Page 68

buffer does actually handle the video data as well, and at the moment, I can't find it.

Q. Is there some other card you're looking for?

A. I can't find it. Doesn't the last paragraph on 57 suggest that the buffer is holding the information in video mode as well?

Q. I'm sorry, doesn't what?

A. If you look at the last paragraph on Page 57, "This number made identical to the number of picture points stored on a track in video mode."

Q. Well, the last sentence says, "This allows all tracks to be written or read as data or video which gives the control computer the ability to add title information onto the end of the video track," which again, suggests to me it's only a computer that's playing a role in using the ram. Sometimes the computer is writing video so it can add a caption or something. Is that an incorrect interpretation?

A. I think it is, and I'm just trying to get you proof. Sorry, I think it's incorrect is what I'm saying, because I think it is.

Q. Maybe we can break for lunch, and if the

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witness can find -- I guess my basic question is exactly what buffers is the witness relying on in paragraph, for example, 66, where there's a reference to a disk data buffer being used in connection with size reduction, and where in the manual does it describe that use. Okay?

MR. SUMMERSGILL: Fine.

VIDEOGRAPHER: The time is 12:27 p.m. Going off the record.

(Luncheon Recess)

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AFTERNOON SESSION
VIDEOGRAPHER: The time is 1:31 p.m. We are back on the record.
BY MR. BEAMER:
Q. Mr. Taylor, did you manage to find any additional information concerning the data buffers in the Paint Box?
A. Yes, I did.
Q. Could you point it out?
A. If we can turn to the beta buffer card, please.
MR. SUMMERSGILL: Could I just clarify whether we are talking about the DLS or the Paint Box?
Q. Which product are you talking about and what exhibit are you on?
A. I'm on Exhibit 6, and I'm talking about the 6000.
Q. Okay.
A. If I can take you to the bottom right-hand corner, it says, "Read Data." The data comes in, goes up into a deserializer, and then the diagram turns into that broad dotted line, which goes up to the top right-hand corner, and appears to go at that

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point into two directions. That line, the top of it is marked, "Disk Data Out."
The device to the left of that, the drawing convention has been broken, because on that case, the inputs are on the right-hand side of that device, and the output is on the left. So the deserialized disk data goes into the ram on the disk data buffer, and from there on to the left-hand side of the second diagram onto the system bus. That is the path used when data is going from the disk directly to the frame store.
The case when in size change is taking place, we go back to the top right-hand side of the diagram. At that point the data turns right and leaves the card, and follows the path that you were saying before lunch.
MR. SUMMERSGILL: Why don't you clarify which path you were talking about?
A. There was a path from there through the decoder into the buffer, which is on the filter card that does the size change.
Q. So when data is going from the disk to the size reducer, are you saying it does not go into the data buffer ram in this schematic, but rather, turns

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right and goes to the decoder block?
A. That's correct.
Q. Under what circumstances does it turn left and go into the ram?
A. When it's not having its sized change and it's going to the frame stores.
Q. I had thought when it was not having the sized changed it went through the filter, but the filter just multiplied the coefficients by zero or one. That was your testimony last time.
A. The manual -- I also found reference in the manual, which, to the best of my knowledge, corroborates what I'm saying now, and if I could just find it. It was the overall system description, I think. Maybe it was the description of the data buffer card.
It was a passage that you yourself read out earlier which talked about it going directly to the frame stores.
MR. SUMMERSGILL: Page 46. I think that's wrong. I'm sorry.
Q. The two areas that I was looking at were on Page 28 and on Page 57.
A. I can't find that now.

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Q. Why would the data have to go through this data buffer ram when there was no size reduction if it was going eventually to the frame store?
A. I think the frame store, particularly the encoded one, had a -- its inputs were on the system bus. I think if you look on the bottom left of EKC 2923, I think you'll find that it's a system bus.
Q. Okay. We can go on. In Paragraph 75 of your report on Page 24 and 25, you talk about a method, and let me have you turn to that and I will ask you the question.
A. 74 and 75 did you say?
Q. 24 and 25, Paragraph 75. You were talking about assigning names or numbers to full-sized and reduced sized pictures?
A. Yes.
Q. There's a corresponding Paragraph 155 when you're discussing the Quantel 6000, and that's on Page 50 and 51, and in that paragraph you talk about automatically incrementing assigned numbers for a sequence, and you don't mention that in Paragraph 75. So my question is, did the Paint Box also have an auto increment feature as of NAB '82 or not?
A. We believe it did, but in a slightly

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different way, that that still store would assign just a clear number. In the case of the Paint Box, if the operator didn't assign a title, it would assign a number to it, but in a slightly different way, because it would be a long number, and not just the simple slide number that the still store had.
Q. So would it assign consecutive numbers as you saved one picture to the next?
A. Yes, it would.
Q. Do you know whether that's described anywhere in any documentation?
A. I don't think it is, no.
Q. When I asked you this question before, you gave an answer, but since then time has passed, so I will ask it again. Do you have any specific recollection of someone adopting this convention?
A. Absolutely. NBC was one of the very early customers for the Paint Box, and in their graphics department, this was a technique I personally witnessed.
Q. Do you remember who was doing it?
A. I can see the person. I can't think of his name.
Q. So what were they doing, that you remember?

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A. They were creating a series where there was a need for full-sized images and reduced-size images for a series of graphics, and they would choose a number, starting with 100, for full sized, and then exactly the same number, starting at 1,000, for the reduced size, and it was that technique, but whether it was actually 100 or 1,000, I don't remember, but I remember that actually happening.
Q. Was this a specific project that they were working on or for a procedure they had adopted; what can you remember about that?
MR. SUMMERSGILL: Objection.
A. It was done. I don't know that that was done because it was in some operations manual they revised themselves or it was just custom and practice, but it was done.
Q. When did you observe this?
A. I can't remember when NBC got their first machine. It must have been in late '83 -- no, late '82. Yes, late '82.
Q. As of April of '83, when this patent was filed, how many Paint Box customers had Paint Box he is and were using them?
A. I can't think of the answer off the top of

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my head. I'm sure they must be documented somewhere.
Q. Can you remember some? You've testified, I think, that the weather channel got theirs in the fall of '82.
MR. SUMMERSGILL: Objection. Mischaracterizes the testimony.
Q. Well, sometime in '82. I forget when.
A. It was in the summer of '82.
Q. What else can you recall?
A. NBC had some, I think ABC had some. I can't remember who else.
Q. Are you aware of any documents that exist, other than the -- we've seen documentation about the weather channel transaction. Are you aware of any other documents that evidence sales prior to April of '83?
A. I think, as I testified before, all the papers that Quantel had, I think have been passed to Wilmer Hale, and therefore, I have to assume that you've got them as well.
Q. In the course of your work for this case, have you seen documentation, other than the weather channel documentation?

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A. Not that I recall, no.
Q. In Paragraph 77 you discuss that reduced-size image stored in random access memory, this is in the context of the Paint Box, and the third sentence says, "When the Paint Box operator used the cut and paste feature to generate a reduced-size image, the reduced size image was generated and transferred from the size reducer to a frame store." Is it correct that in order to reduce the size of an image, that image has to first be stored on disk in the Paint Box?
A. Yeah, the size reducer worked at disk speed.
Q. So am I correct in saying that in order to reduce the size of a picture, that picture had to first be stored on disk; that's the way the Paint Box worked?
A. It would come from the disk, yes.
Q. On Paragraph 91 on Page 30, you discuss your obviousness opinion, and state in the second sentence, "There was an explicit motivation to combine the DLS 6030 with the Paint Box."
What is the result of the combination that you're basing your opinion on?

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Q. You cite 66 to 68, and that's what I assumed you would want to focus on. This happens to be everything cited in your report from Sheikh.
A. Isn't he saying in 67 that you would make a copy of it?
Q. Excuse me.
A. Isn't he saying in Line 5 of 67 that you would make a copy of it?
Q. Isn't he referring to the full-sized image that in order to generate Figure 3, you have to first save a copy of the original full-sized image on disk, and then you perform the various cut and paste functions?
A. Yes, that could be storing it on disk.
MR. SUMMERSGILL: Is there a question pending?
MR. BEAMER: I thought there was.
A. I agree with you, that could be to disk.
Q. Is there any other document or testimony that you rely on for questioning Gafford's statement about having to store the image on disk before it was reduced?
A. Sorry, could I just go back to 67. If you go to Line 13, isn't he there saying that you don't

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have to necessarily store it to disk?
Q. Yes. You don't have to store the full-sized image on disk if you don't care if you ruin the image. If you're going to overwrite the image, then you don't have the original image. So you've got to store it on disk before you perform the rest of the operations. That's what he's saying, isn't he?
A. Yes, I agree with you.
Q. So is there anything else you're relying on with this statement where you say you disagree with Gafford in 122?
A. Certainly the block diagram shows the ability of the frame store to talk directly to the computer.
Q. Anything else?
A. Not that I can recall at the moment.
Q. In Paragraph 117, Page 39, you refer to the size of this random access memory associated with the computer as being 512 kilobytes. Could you turn to this thick manual, Exhibit 50. Do you understand this to be the manual for the computer that you're referring to in Paragraph 117? And could you turn to Page 130 of Exhibit 50.

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MR. SUMMERSGILL: Of course, just to make the record clear, norm, you didn't cite this for that statement?
MR. BEAMER: No. I'm returning to something else.
MR. SUMMERSGILL: Okay.
MR. BEAMER: I'm asking him -- I'm going to ask him questions about the topic.
Q. On Page 130, which is the last four digits, 1193, do you see there's a section on the PDP-1134?
A. Yes.
Q. Do you understand the PDP-1134 is the computer that was used in AVA?
A. Yes.
Q. Isn't it true that the maximum memory size that the PDP-1134 could handle was 124K 16-bit words as stated at the bottom of that page?
A. This is contradicted elsewhere. There's quite clear evidence that AVA had 256K words of memory, not which is 512 kilobytes.
Q. This manual is saying the PDP-1134 was only capable of addressing 124K words, right?
A. Yes. And there's not a manual that says you have twice that memory in it.

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Q. So the evidence is contradictory as to how much memory is in AVA, right?
A. Correct. I'm sorry, I thought there was also some testimony to the amount of memory that was in it. Was it Mr. Evans, didn't he testify?
Q. Did you consider Mr. Lindeman testimony about the size of the memory?
A. I thought Mr. Evans was the person who designed this; was he not?
Q. He was the manager of the team. Mr. Lindeman was also the manager on the team, and he also testified about the size of the memory. Did you consider his testimony?
A. I thought his testimony was -- I would need to look at that again. Sitting here, I seem to remember that some of that testimony was confusing, whereas Evans was absolutely clear.
Q. On Page 140 of Exhibit 50, if you would turn to that. Actually, Page 142. At the bottom of that page it says, "Using all of the eight available active page registers in a set, a maximum program length of 32,768 words can be accommodated." Is it correct that in the PDP-1134, the maximum memory that anyone application program could access was

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this value here of 32,768 words?
A. Then maybe the AVA was modified in some way, because the evidence is that you had twice that.
Q. Well, you agree that whatever the number is, the largest amount of memory that the AVA application could use was whatever the PDP-11 system allocated to it, and that includes both the amount of space that the program takes up, as well as the amount of data that the program uses, correct?
MR. SUMMERSGILL: Objection. Asked and answered.
A. I'm sorry, you'll have to repeat the question.
(Reporter read back pending question)
A. I think that's a confusing question. We know, roughly, the amount of space the application program, the testimony to say how much the application was, we know how much the operating system was, we know how much the bootstrap was, and that leaves -- actually, irrespective of whether it's bytes or words, it still leaves a lot of memory, and in days when memory was hugely expensive. If you weren't going to use that, why

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would you have it there?
Q. Wasn't -- regardless of how much memory you had, the operating system only -- if the operating system only allocated a certain amount of memory to a particular application, that's all that memory -- that's all the memory had to have, right, regardless of how much memory there was?
A. Mr. Beamer, you're missing my point. There's contradictory evidence, we seem to have agreed to that. In days when memory was so expensive, you would not put physical memory into a machine that you couldn't use. You just wouldn't. So I have to assume, and it's personal reasonable to assume, that the memory that was in the machine was usable, because why would you spend that money if it wasn't?
If you were address limited, say you're going to put all of this memory in and never use it, that doesn't make commercial sense to me.
MR. BEAMER: Let's take a break.
VIDEOGRAPHER: Time is 2:45 p.m. This is the end of video cassette number two. We are going off the record.
(Recess)

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VIDEOGRAPHER: The time is 2:59 p.m. This is the beginning of video cassette number three in the deposition of Richard Taylor. We are back on the record.
BY MR. BEAMER:
Q. Mr. Taylor, I just want to make sure whether or not you agree with my interpretation of Exhibit 50 as saying that the maximum program size for an application, as far as memory is concerned, is 64 kilobytes?
MR. SUMMERSGILL: I'm sorry. I will object. I don't hear a question.
MR. BEAMER: I'm saying does he agree with my interpretation of this document.
MR. SUMMERSGILL: Objection. Asked and answered.
A. I think I've said there is clearly conflicting and confusing evidence here. So agreeing with the proposition just made would be very misleading in light of the confusing evidence.
Q. Well, I think it's fair to ask you, as an expert, whether you're understanding of what a PDP-11 manual says is correct or not, whether or not it contradicts other evidence?

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A. You're asking me whether or not the manual says that?
Q. Yes.
A. Did the PDP-11 that AVA actually used have that limitation? I don't know. There is conflicting evidence for the reasons I've stated before the break.
Q. I'm now asking you to set aside the conflicting evidence, and to either agree or disagree for me as to what a document says. I say that the document says that the program --
A. Take me to that --
Q. -- is limited to 64 kilobytes. Do you agree or disagree with my interpretation of what the manual says?
A. Could you take me to that page, please?
Q. Well, I'm talking about Exhibit 50, on Page 140, under "Basic Addressing," it says in the third sentence that "While the PDP-11 word can contain address references only up to 32K words (64K bytes) the CPU and UNIBUS can reference addresses up to 128K words, 256K bytes." Then on Page 142, the last paragraph, it talks about, "A program is relocated in pages consisting of from one to 128 blocks. Each

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block is 32 words in length. Thus, the maximum length of a page is 4,096 words. Using all the eight available active page registers in a set, a maximum program length of 32,768 words can be accommodated."

Then there's a reference on Page 143 in Paragraph A to a 32K word physical address space, and on Page 144 there a Figure 67 referring to a 32K word program.

So am I correct in construing this document to be saying that the maximum program size is 32K words or 64K bytes?

A. I can confirm that you read the document right, but what I can't confirm is whether that necessarily applies to the AVA system in view of the conflicting evidence.

Q. I place before you a document that was marked as Evans Exhibit 6, which is an Evans patent. You refer to this, for example, at Paragraph 129 of your report on Page 143. I'm just asking you to confirm that this is the patent you're referring to in Paragraph 129?

A. Yes, I'm referring to the '915 patent.

Q. Column 3, Line 24, if you could turn to

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that. It refers to a conventional DMA type of block access, and goes on to describe that. Do you see that?

A. Column 3, Line 24 did you say?

Q. Column 3, Line 24. Does DMA refer to direct memory access?

A. Yes, it does.

Q. Do you agree that as of 1980, when the original application was filed, that DMA was a well-known conventional technique?

A. I can't remember when DMA first became common. It would have been around about that time, but I can't remember the exact time.

Q. In Paragraph 135 on Page 44, you are talking about a limitation regarding storing full-size and reduced-size images in random access memory simultaneously," and you say "Even if Ampex were correct that the AVA did not meet this limitation, electronic still stores with greater memory capacity met this limitation and it would have been obvious to combine the AVA with such electronic still store systems."

The same question as similar to what I've asked before, what is the combination that you're

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actually referring to here?

MR. SUMMERSGILL: Objection.

A. Well, again, as I understand the law, if you have a system with multiple frame stores, and you have a system with a single frame store, it would be an obviousness argument to say you could have multiple frame stores in the single frame store system, and indeed, AVA itself went on to describe expanded frame stores.

So the combination I'm talking about there is if you're adding frame store blocks -- sorry, adding -- using the knowledge that a still store system had multiple frame stores with the knowledge of the AVA system.

Q. In paragraph 140 you, again, talk about obviousness, and that's on Page 146. You say that "To the extent that Ampex argues that AVA cannot meet the elements of certain claims, it would have been obvious to combine AVA with a Quantel DLS 6030." Is that the same point that you were making in Paragraph 135 that we just talked about or are there additional combinations or claim elements that are being met, in your opinion, under obvious necessary?

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A. 135 is referring specifically to storing full and reduced-size images in random access memory. Again, you've got two systems together which have overlapping characteristics. I've already given you one example.

Another example would be, for example, if it was decided that the size reducer had to be a dedicated size reducer, not a general purpose computer, then it would be obvious combining AVA and the capabilities of the still store, it would be obvious that you could have a -- use the dedicated size reducer in the DLS and the AVA or the opposite could also apply.

Q. Any other combinations that you are relying on? Should I stop, by the way? Any other combinations that you're relying on?

A. Not that I can think of sitting here.

Q. Starting at Page 141 you discuss the Quantel 6030, and at Paragraph 144 you say, "The competence of the DLS 6030 included a Winchester disk, two output frame stores, a preview frame store, a disk data buffer, a size reducer, a micro computer, a preview monitor and one or two display monitors."

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Is it correct that the '776 patent also describes such a system? That's Exhibit 32 that we previously had testified about.

MR. SUMMERSGILL: Objection.

A. The '776 patent describes a still store. It does not describe all the capabilities of the DLS 6030.

Q. Does it describe all of the components that you name in Paragraph 144?

A. I'd have to check.

Q. If you could turn to Figure 18, there are, I think, a number of such components listed there or shown there.

A. Figure 18 has additional components into it that the description of 144 doesn't have, and the DLS has elements that Figure 18 doesn't have.

Q. Well, is the list of components in Paragraph 144 described in the Taylor patent either at Figure 18 or elsewhere in the patent is my question?

A. Sorry, I think that was a different question, so could you repeat it, please.

MR. BEAMER: Would you read it back.

(Reporter read back pending question)

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A. I'd have to carefully read through the patent to be able to answer that. I'm willing to do that if you want me to.

Q. Well, Figure 18 shows a preview frame store, right; that's element 24?

A. Even that I would argue with. I think the preview 24 is different to the preview referred to in 144.

Q. What about Figure 19, would that be more akin to the way the DLS 6030 actually used the preview frame store?

A. Even that I would argue with. It would infer you couldn't preview the output while it was going to disk, and I think on the 6030 you could.

Q. So what's the difference between the preview frame store of Figure 18 and the preview frame store that you're referring to in Paragraph 144?

A. Talking about Figure 18 for the moment, I think frame store 24 there is a decoded frame store designed to act as a conventional preview in the broadcast studio, and the other two frame stores are for an on-air change -- sorry, 124 and 125 frame stores are for an on -air change over using switch

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127. Frame store 14 on the inputs of Figure 18 is more akin to the preview frame store referred to in 144, but doesn't show its display to the outside world.

Q. In Column 11, Lines 29 to 34, does that explain that you could combine the frame store 24 into frame store 14, and thus, using the frame store 14 the way you're referring to it in Paragraph 144?

A. I think I've already answered that, because Figure 19 --

Q. No, I'm talking about modifying Figure 18 at --

A. Sorry, what line number?

Q. 34 to -- I'm sorry, 29 to 34.

A. Forgive me. That -- oh, sorry. No. I think that substantiates what I just said. It goes on to then describe that alternative arrangement in Figure 19 with the difference that I just talked about where it appears that you cannot use the frame store preview mode at the same time you have either it connected through to the disk or you have it connected to the outside world.

Q. What's the difference between that and the 6030?

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A. I think the 6030 had a permanent connection to the outside world.

Q. Is there anything else in 144 that's not shown in the Taylor patent?

A. Can I just verify what I said by looking at Exhibit 6?

Q. What are you looking for?

A. There's a diagram of the 6000 series, an overview of the diagram which would confirm, I hope, what I just said.

Q. Well, there's a block diagram at Page 50-51. I'm sorry, that's the Paint Box. There's a block diagram --

MR. SUMMERSGILL: There's one at 142860.

MR. BEAMER: 861 is more detailed.

A. Yes, that confirms the point I'm trying to make, that there's a subtle difference between Figure 19 and this block diagram on 2860.

Q. In any event, there are multiple frame stores shown in both Figure 18 and Figure 19 of the Taylor patent, correct?

A. There are multiple frame stores, yes.

Q. And there's a disk data buffer, correct; not in Figure 18, but in Figures 15 and 16?

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A. Could you repeat the question.
Q. Let me rephrase that. There's a data buffer that feeds the size reducer shown in '776, Figures 15 and 16, correct?
MR. SUMMERSGILL: Objection.
A. I would say the data buffer which is part of 15 and 16.
Q. And that provides data to the size-reduction function, correct?
A. In some cases it feeds data and other cases it is part of the size-reduction function.
Q. What cases is it part of the size-reduction function?
A. If you take Figure 16, it's providing the line delays that the vertical interpolation needs.
Q. And the Taylor patent shows a Winchester disk, correct?
A. It shows a disk. I would need to confirm whether it was a Winchester disk or not.
Q. In any case, it's a magnetic disk that stores data, correct?
A. Yes.
Q. And, of course, it has a size reducer, right, the '776 patent discloses a size reducer?

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A. Yes, it does.
Q. On Paragraph 146, on Page 48 you state that, "The 6030 could receive full-sized video images from an external source, such as a television broadcast or video camera. The input full-sized image was stored in the preview" --
A. You've completely lost me. What page are we on?
Q. Page 48, Paragraph 146.
A. Thank you. I was just reading from the last two sentences. "The DLS 6030 could receive full-sized video images from an external source, such as a television broadcast or a video camera. The input full-sized image was stored in the preview frame store for display."
That's also shown in the Taylor patent, right, the '776 patent? For example, Figure 1, Item 12, is a camera, which is an external source, right?
A. Item 12 is a camera; that's correct. I was just pondering the sentence, the input which you also read, which was "The input full-sized image was stored in preview frame store for display." I would add the caveat that I have in previous answers, that the arrangement of Figure 19 is different to the

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6030.
Q. Then in Paragraph 147 you talk about random access memory with an input port and an output port. Is it correct that the random access memories that are discussed in the '776 patent have an input port and an output port?
A. Yes.
Q. Paragraph 148, again, talks about a disk storage, and you agree that the '776 discloses a disk storage to store video image data; is that right?
A. Yes.
Q. Paragraph 149 talks about storing a full-sized image in random access memory. That is shown and disclosed in the '776 patent, correct?
A. Yes.
Q. On Paragraph 150, it then talks about storing the full-sized image on disk, and that capability is disclosed in the '776 patent, correct?
A. Yes.
Q. Now, in Paragraph 151, there's a discussion about the meaning of selectively generating, and you go on to say that the size reducer and the DLS 6030 could create a reduced sized lower resolution image

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at the user's option, I believe you're saying there. That's also true of the '776 patent size reducer, correct?
A. Yes.
Q. Further into that paragraph there's a discussion of the disk data buffer, which we've previously talked about. It's true, is it not, that there is a data buffer that is shown in Figure 15 that holds video image data prior to it being reduced in size, correct, in the '776 patent?
A. Yes.
Q. And then the output of the size reducer in the '776 patent goes to random access memory in the Figure 19 version of the disclosure, correct -- I'm sorry, in the Figure 18 version of the disclosure, correct?
A. Sorry, could you repeat the question?
Q. I will rephrase it. The output of the size reducer goes to random access memory in the Figure 18 version that's disclosed in the '776 patent; is that correct?
A. Yes.
Q. Now, in Paragraph 152 you discuss the stack don't care function as a method of automatically

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generating reduced-size images. It's correct that in the '776 patent they disclose or you disclose the use of a browse facility or a poly photo facility as mentioned in Column 3, Line 55, which automatically generates reduced-size images, correct?

MR. SUMMERSGILL: What column?

MR. BEAMER: Column 3, Line 55.

A. Sorry, you'll have to explain that. You've just taken an absolute giant leap of logic there.

Q. My question is that this reference to a browse facility is referring to automatic generation of reduced-size images, isn't it? Where it says that a total of 64 miniature pictures are displayed at once on the CRT?

A. I think that's different from with a we were discussing in 152.

Q. What's the difference?

A. I seem to remember in the last deposition we had a long argument about the difference between a browse, a prestored poly photo, and the ability to call up a specified reduced-size picture, and you've just lumped all three of those together in that one question, and they are different, very different.

The one thing that wasn't disclosed to the

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patent office, I think, was – amongst other things -- or what was not disclosed to the patent office -- was the 6030 itself which did have the stack don't care function, which is able, as I say here, to apply the size reduction to all the images in a stack, which I don't think is disclosed in Lines 55 through 60 of Column 3.

Q. Well, do you agree that the browse facility is referring to the automatic generation of reduced-size images, in this case, 64 at a time?

A. I don't think that those lines that you've referred to make that clear, whether that is a browse in the sense where the pictures come up one after the other or whether it's a browse where they all come up at once.

Q. On Column 12, starting at Line 24, don't you agree that that's describing the former in the two alternatives that you've just referred to, i.e., generating them on the fly as opposed to prestoring the matrix?

A. Did you say Column 12?

Q. Column 12, starting at Line 23 or 24.

A. Again, I think you've taken a leap of logic with hindsight. What about the following paragraph

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that talks about scrolling horizontally or vertically?

Q. So it can be made to scroll horizontally or vertically, i.e., you either stop when you fill up the screen or you keep going with a continuous scroll. Either way, it's automatic generation of reduced-size images, isn't it?

A. I think you're applying a global phrase to a whole series of different scenarios. So I'm afraid I have to disagree with you.

Q. So how do you interpret "using a fixed degree of compression to generate a frame comprising a number of stored pictures, and then the multiple display of pictures is made by writing more than one compressed picture from the disk into the frame store. This compression can be achieved during actual disk time or alternatively," and then there's another alternative. The first of the alternatives is referring to on-the-fly compression and creation of a browse screen, isn't it?

A. I'm not this is obvious if you haven't seen the browse that the 6030 has. It's not clear to me that that is -- I think you're using hindsight there. It's not as clear as I think you're trying

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to make it out to be.

Q. Isn't that certainly what you were referring to as the patentee since that's the exact way that 6030 was performing the function?

A. Again, I'm not sure that's right either. Doesn't the patent come before the embodiment?

Q. Isn't that what you had in mind when you wrote that patent?

MR. SUMMERSGILL: Objection.

Q. Namely, on-the-fly generation of a browse.

MR. SUMMERSGILL: Objection.

A. It's an interesting poly photo was a trademark of an organization in the U.K. that used to produce a large picture made up of a whole series of small pictures used for taking pictures of kids. And the fact that it says poly photo there would suggest that that was actually talking about the display of all the pictures at once, because that's what poly photo is.

I just think the 6030 is different to this patent. You can't get away from that. Yes, you can go through it and pick up words that are the same, but the essence is, the 6030 had things in it that were different to this patent, and this patent has

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things in it with a different 6030.
Q. Is it your testimony that your discussion in Column 12 of the browse or poly photo facility was not meant to describe what you were then working on, which is the browse facility that the 6030 had?
MR. SUMMERSGILL: Objection.
A. The browse facility for the 6030 had not been March of 1979. As I say, this patent contains things which ended up not being embodied in the 6030, and the 6030 had things in it which aren't in this patent. I really can't help you. Here we are 27 years later saying that this was exactly what appears in the browse. I just don't think that's a fair leap of logic.
Q. Do you agree that -- if you could get the '121 patent before you that you were looking at this morning. Do you have it?
A. Yes.
Q. In Column 1, starting at Line 34, it says, "However, each of the several images which are to be simultaneously displayed must first be read from the disk store as full-sized images, and then reduced for insertion into the multi-image display." Then further down at Line 50 it refers to the '776

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patent, and it says it "discloses the still source system in which multiple images may be accessed and reduced in size for simultaneous display as discussed above."
Isn't at least the description of the '776 patent interpreting that the browse facility is as actually done in the 6030, namely generated on the fly, one picture at a time, by reducing each full-sized picture and placing it in the frame store?
A. I think that's a completely different point from the one you were making before. The '121 patent was written after the 6030 had been produced. What he doesn't do, though, is go on to describe all the features of the 6030, and in particular, the stack/don't care feature.
Q. But in Column 12, as in formed by the discussion in Column 1 of the 121 --
A. Sorry, you've got me confused.
Q. Column 12 of the '776 patent, someone reading that, plus Column 1 of the '121, wouldn't that compel the interpretation that this is disclosing a browse function where the images are generated on the fly?

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MR. SUMMERSGILL: Objection.
A. The '121 is describing the nano field of the browse capability -- of a browse function. It is not describing the four characteristics of a 6030.
Q. Well, in Column 12 of the '776 at Line 32, it says, "The pictures displayed may follow the order actually stored on the disk or alternatively can be in the order actually accessed." Isn't that what the stack/don't care function does?
A. Stack/don't care function hadn't even been dreamt of in 1979. How on earth could it do that?
Q. That's when you first thought of that idea, and that's what you're disclosing right there in Column 12, isn't it?
A. I assure you, Mr. Beamer, we had not thought of it then and we were not disclosing it there.
Q. What is the difference between that and stack/don't care insofar as anything pertinent to this lawsuit is concerned?
A. I'm having real difficulty relating the question to the facts. Stack/don't care allows you to set up a size reduction, and then put the

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pictures continually into that, designed for putting images over a newcaster's shoulders, news anchor's shoulders, among other things.
The paragraph you're referring to on Line 32, Column 12, is talking about -- is pointing to taking out pictures just in the order they are stored on the disk or when it says actually accessed -- I don't quite know what that means actually, just thinking
Q. Well, it means something other than the order that they are on the disk, right, i.e., some order imposed by the user?
A. No, I'm sorry. For example, if you have done a title search, and it brings up a mosaic of images in the order of the title search, it's not necessarily the same as the order stored on the disk.
Q. So that would be an example of what they are talking about here, the result of a search?
A. It doesn't make it clear what it means really, does it. I don't see -- what does it mean "in the order actually accessed"? I actually don't know what that sentence means.
Q. On Column 4 of the '776 patent, starting

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at, I guess, Line 2, it says, "In addition, however, by the provision of suitable software using standard techniques, for example, it's possible to cross-reference the contents of the store by a series of classifications. Typically these could include sports personalities, politicians, actors, fires, football matches, races. Each shot is designated, a code number which allows the reviewer to call a complete page of items coming under any of the classifications above. So, for example, he may see a page of sports personalities from which to choose his shots."

Does that help explain what is meant in Column 12 by accessing it in the order or displaying it in the order actually accessed

A. Yes. If you've done a search forefoot ball matches, it would then pull up the pictures in the order on the disk, but limited to football matches.

Q. What is it about the stack/don't care function that you think is more pertinent to the analysis of the validity of the patent, then, than this, than this browse function that's discussed in '776?

A. Stack/don't care allowed a user to display

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and store reduced-size images to take, for example, you could have a full-sized image, followed by a reduced-size version of that full-sized image, followed by a second full-sized image, followed by a reduced-size version of that second full-size image, and so on, and so forth, which, as I understand it, is one of the features that your clients -- which is in dispute, and nowhere do I find in the '776 patent that description I've just given. Nor can I even with hindsight find something in the '776 that points me to that.

Q. How did the stack/don't care function do what you just said?

A. Interesting, it wasn't just a scientific experiment. It was used very frequently in the U.K. quite a lot, and I think here in the U.S. as well. You would have an anchorman would start a story and have a frozen picture that was quarter size on his shoulder. Then they would want to go from the camera shot of the anchorman and still picture to a full-sized picture with the anchorman still voicing over. So you would have a reduced-size picture and a full-sized picture of the same image.

The way that was done was on the control

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panel. You had the ability to set up a size reduction and a position, and you could have alternatively, as you were going from still one/ store two on the output, store one would produce a reduced-size image, and store two would produce a full-sized image, and sometimes they also wanted to actually store the reduced-size image, and so they would make sure that was recorded back. So you would actually have two versions in the machine, and none of that is in the patent -- sorry, in the '776 patent.

Q. Well, each of those full-sized and reduced-size images had to be preprogrammed as part of the stack, right?

MR. SUMMERSGILL: Objection.

A. I have to be careful I'm answering the right question. I'm not sure I understand what you just said. You have your output device -- sorry, your output display panel, you would set up what you wanted in terms of position and size. Then, yes, you would have to tell it that you wanted a full-sized picture of Boston Harbor. But the next time you push the button, you would automatically get the reduced-size picture of Boston harbor.

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Q. Because you didn't change the parameters of the size reduction?

A. Because the stack/don't care was able to simply say, okay, every time I'm asked to output from that store, I will output that size and position.

Q. So I don't really understand why you're saying the '776 patent doesn't disclose that, because the '776 patent allows you to save any picture to generate any picture at any reduced-size factor? So first you generate a first picture at a certain reduced size, then a second, then a third. What is it about the stack/don't care that makes any difference?

A. I don't think anything of what you just said covers the situation where you can have a full-sized image followed by a reduced-size version of that full-sized image every single time. You are using hindsight. You are using the fact that I've just said that to go back and kid yourself it's in the patent, when it's not.

Nowhere in the patent can you take me to tell me that that actually is disclosed, because it's not in the '776. And the reason it wasn't, it

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had never even been thought of.
Q. I guess I'm still having trouble understanding what the pertinence of that is to the patent, to the '121 patent, the ability to successfully display a full sized, then a reduced size, then a full size, then a reduced size. What, if anything, does that have anything to do with the patent?
A. Because you are generating a corresponding reduced-size image for each full-sized image.
MR. SUMMERSGILL: When we get to a -- you guys can keep going, but when we get to a good breaking point, we have been going about an hour.
MR. BEAMER: Okay. Let's take a break.
VIDEOGRAPHER: The time is 4:04 p.m.
(Recess)
VIDEOGRAPHER: The time is 4:17 p.m. We are back on the record.
BY MR. BEAMER:
Q. Just to follow up on this stack/don't care function, you described the ability to alternatively generate a full sized, then a reduced size, full size, then a reduced size. This didn't include the steps of storing each such picture back into disk,

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does it? In other words, the stack/don't care function didn't affect the storage of a reduced-size image onto disk, did it?
A. Not in itself, no.
Q. On Paragraph 154, you talk about -- that's on page 50 -- you talk about the DLS 6030 generating reduced-size images corresponding to full-sized images. That could also be done with the '776 disclosure, correct? You could generate reduced-size images corresponding to full-sized images in the manner that you're using that term in Paragraph 154?
A. The 6030 could generate from a full-sized image and allow a lower resolution version of that full-sized image, and the '776 does describe capability of doing that.
Q. And Paragraph 155, you talk about the ability for a user to adopt a naming convention so as to associate full-sized and reduced-size images stored on disk. The '776 patent discloses a system that could also do that, right?
A. Where does it do that?
Q. Excuse me?
A. Does it? Where does it do that?

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Q. Well, it talks about the ability to name images. For example, at Column 3, Line 43, talking about identification data to identify a particular picture held in storage. So once you've got that, you've got the ability to name a naming convention of the type that you're talking about in this paragraph, correct?
A. You have to take the whole of 155, and you won't find in the '776 patent the last sentence of 155.
Q. Okay. But are you limiting your analysis to saying that the 6030 only satisfied this requirement by means of using the automatic increment, because I thought that you were saying that for the Paint Box, you didn't need to rely on that for the same functionality?
MR. SUMMERSGILL: Objection.
A. Maybe I got lost, but I thought we were discussing whether the '776 discloses everything that's in the 6030, and, yes, it has the ability to -- the '776 does describe the ability to title pictures.
Q. Okay.
A. The 6030 went on beyond that, and had the

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ability to automatically increment assigned numbers.
Q. And isn't it your position that even if it didn't, it would still create a correspondence, as Ampex maintains is required by the claims, because a user could adopt a naming convention along the lines of what you describe here?
MR. SUMMERSGILL: Objection.
A. Could you read the question back.
(Reporter read back pending question)
A. I'm having trouble with the question, because simply saying a machine has the ability to title images is different to seeing the machine and using it in the way -- at least in my mind it's different -- than using it the way I've described.
But, yes, if somebody could take the leap from simply saying that the ability to title, therefore, allows a naming convention, then if you're saying that that's what "corresponding" means, then, yes. But you've taken a sentence, which simply says you can title pictures, and gone all the way to saying that's the same as correspondence.
Q. Well, there's nothing in any document about the 6030 that says anything more than what the

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patent says, does it? It gives you the ability to name images on disk, and you're saying that that allows people to do the kind of naming operations that you say means they correspond; isn't that right?

MR. SUMMERSGILL: Objection. Just objection to the extent that you're suggesting that it's his opinion that that type of correspondence is required. With that caveat, you can answer.

A. You would assign a number which gets you much further down the path of this names convention I'm talking about, and seeing it do that gets you a lot further down the path than simply seeing a sentence that says you can title images.

Q. In Paragraph 156 you talk about transfers reduced-size images to random access memory. The '776 system that's disclosed in the patent is able to do that, correct?

A. Yes, the '776 shows the ability to --

Q. And in Paragraph 157 --

MR. SUMMERSGILL: I'm not sure he was done with his answer.

A. Shows the ability to transfer a reduced-size image to random access memory.

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Q. In Paragraph 157 you discuss the ability of the 6030 to directly transfer from random access memory to size reducer and vice versa. The system disclosed in the '776 also has this capability, correct, to the same extent that the 6030 did?

A. I don't think the '776 necessarily shows the direct transfer.

Q. Why not?

A. It does, you're right.

Q. Then Paragraph 158 talks about storing reduced-size images on disk. Subject to the caveat that perhaps we disagree as to exactly what's being stored on disk, isn't it correct that the '776 Figure 18 embodiment could store reduced-size images on the disk to the same extent that the 6030 could?

MR. SUMMERSGILL: Objection. Vague.

Q. Right?

MR. SUMMERSGILL: Objection. Vague.

A. The '776 does disclose. Yes, it does.

Q. Indeed, Figure 19 discloses an embodiment which actually stores only the data specifically associated with a reduced-size image on disk without any additional data which you've referred to as extraneous data in the past; isn't that right?

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MR. SUMMERSGILL: Objection.

A. I just want to make sure what it actually said in Figure 19. I can't find Figure 19 in the description.

Q. It's described in Column 11.

A. Thank you.

Q. Lines 35 to 46.

A. Yes, you're right. Figure 19 does disclose putting the size reducer before storage on disk.

Q. In Paragraph 160 you talk about recalling either the full-sized image or the reduced-size image from disk to random access memory. The systems disclosed in the '776 can do that as well, correct?

A. Sorry, what paragraph are you on?

Q. 160.

A. Yes, it does.

Q. And 161 talks about transferring directly from disk to random access memory, and you say that the 6030 could recall images from disk, transfer directly to the disk data buffer, which is random access memory. Likewise, isn't that correct that in Figure 15, image data was transferred directly from the disk to the buffer shown on Figure 15 called the

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data store ram?

A. Yes.

Q. And in 162 you talk about the alternative way that the 6030 met this limitation by setting the size reducer at unity, in which case it acted like a piece of wire. That's how the size reducer in the '776 worked also, correct?

MR. SUMMERSGILL: Objection. Vague.

A. Yes. If you say element 23 to unity, it would go from the disk to the frame stores.

Q. On what figure?

A. Figure 18 and Figure 19.

Q. Then in paragraph --

A. Could I just qualify that. In Figure 19 it's used in the size change, and my answer was assuming the size change was 23 in the position where it is after the disk.

Q. In Paragraph 163, you talk about storing the full- and reduced-size images in random access memory simultaneously. Is it correct that the system of the '776 could do that in the same manner that the 6030 could do it?

A. Yes, it could.

Q. And is it correct that 164 also can be done

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in the '776 the same way you describe for the 6030?
MR. SUMMERSGILL: Objection. That's a compound question, because there are a number of things discussed in Paragraph 164.
MR. BEAMER: Well, my question applies to all of them.
MR. SUMMERSGILL: That's why it's a compound question.
A. The '776 discloses the ability to have a full-size image in one frame store and a reduced-size image in the other frame store.
Q. In 165 you talk about the browse function, and again, in -- well, in 165 you talk about the browse function. As described in the '121 patent, does the '776 patent disclose the same browse function as is described here in Paragraph 165?
A. Sorry, can you define that question a little bit tighter? Are you saying the description in the '121 -- it's in Column 1?
Q. Right. The one we were focusing on earlier.
A. Now I've forgotten the question.
Q. As described in that portion of Column 1 that we were looking at earlier, does the '776

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patent describe the same browse functionality that you're referring to in Paragraph 165?
A. No. I think that's going back to the ground we were covering before the break. I think that's a step too far, to say that '776 completely describes the same.
Q. 166 you're talking about storing a mosaic. I take it you would agree, then, that the '776 patent does disclose that functionality?
A. Yes, I would.
Q. Finally, a control means in 167, the '776 patent discloses a CPU which would act as the control means under your interpretation of this element; is that right?
A. Yes, that's correct.
Q. In Paragraph 168 you talk about the combination of the 6030 with the Paint Box. Is this any different from your analysis in Paragraph 91 where you also were talking about such a combination?
A. I think it's the same argument, yes.
Q. And likewise, in Paragraph 169, you talk about combining the 6030 with AVA, and is that the same combination that you were referring to in

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Paragraph 140?
A. Yes, it's the same one.
Q. On 170 you talk about the Paint Box user guide, and you say it was released and distributed publicly to Paint Box customers beginning in January, '83. Which customers was it specifically distributed to?
A. It would have been WFAA, NBC, and also the salespeople used to use this type of literature as a sales aid. So they would tend to give it out to anybody they thought was a potential serious customer.
Q. Do you have any record of such a distribution? Are you aware of any record?
A. No. It was common practice then.
Q. So you're saying that the user manual was given out to non-customers?
A. No. What I said was it was given out to potential customers, and, you know, it's a standard technique. You get somebody interested, they either are about to have a demonstration or have had a demonstration, and it's a very flexible machine, the salespeople would tend to give out that document as part of the sales literature to keep people excited

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about either what they were going to see or what they had seen.
Q. How many such people received this manual prior to April of '83?
A. There was a lot of interest in the machine. So I'm sure a lot of people would have seen it.
Q. By the way, let me hand you the document that we're talking about. It was marked as Exhibit 13 in your previous deposition. This is the document that you're referring to in Paragraph 170; is that right?
A. It looks like it, yes.
Q. On Paragraph 177, you refer to the ability to store reduced-size images referred to in the user guide and you refer to page EKC 002000507. Could you turn to that page, please. Could you explain exactly what steps are required in order to resize the cutouts as described here?
A. Let me preface my answer by saying that Paint Box is a very broad machine, and what's being described here is in addition to what I say in -- was it 177. There are other facilities discussed, like draw stencil, which is no relevance to this litigation.